

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p 1  
Edition : 31.08.90  
Replaces : 8.9.89  
Test oil : ISO-4113

Combination no. : 0 400 846 537

Injection pump  
Pump designation : PES6A95D32ORS2693Z  
EP type number : 0 410 896 913  
Governor  
Governor design. : RQ300/1300AB1204R  
Governor no. : 0 420 20. 640

Customer-spec. information  
Customer : DAF

Engine : DNS 620

1st version kW : 150.0  
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X1.50X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 8.7...8.8

100 s: (8.5...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 800

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 87.5...88.5

1000 : (85.5...90.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 800

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.70  
Speed rpm : 1345...1360  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 540...580

TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 11.60...11.80  
2nd speed rpm : 850  
Rack travel in m: 13.00...13.40  
3rd speed rpm : 935  
Rack travel in m: 12.70...13.10  
4th speed rpm : 1080  
Rack travel in m: 11.90...12.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 290  
Rack travel in m: 11.80...11.90  
3rd pressure hPa : 265  
Rack travel in m: 11.30...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 1290  
Del.quantity cm3/ : 88.0...90.0  
1000 s: (85.5...92.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 65.5...66.5  
1000 s: (63.5...68.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...145.0  
1000 s: (127.0...148.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

When adjusting the governor, observe  
service information on microcard  
W-400/008/D15

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 w 3  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 578  
 Injection pump  
 Pump designation : PES6A95D32ORS2779  
 EP type number : 0 410 896 903  
 Governor  
 Governor design. : RQV350...1200AB1236-7R  
 Governor no. : 0 420 213 119

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT 466

1st version kW : 145.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 038  
 Inlet press., bar : 2.80  
 Test nozzle holder  
 assembly : 1 688 901 110  
 Opening  
 pressure, bar : 250...253  
 Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

A03

Prestroke mm : 2.65...2.75  
 : (2.60...2.80)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200  
 Rack travel in mm : 13.50...13.60  
 Del. quantity cm<sup>3</sup>/ : 10.1...10.3  
 100 s : (9.9...10.5)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.9...6.1  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.1  
 100 s : (1.5...2.3)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400  
 travel mm : 8.60...9.00  
 2nd speed rpm : 1250  
 travel mm : 7.30...7.50  
 3rd speed rpm : 550  
 travel mm : 3.10...3.70  
 4th speed rpm : 350  
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 900  
 Del. quantity : 101.5...103.5  
 1000 : (99.5...105.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Testing:  
1st rack travel in: 12.50  
Speed rpm : 1230...1260  
2nd rack travel in: 4.00  
Speed rpm : 1385...1395  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.50...13.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 225  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 500  
Rack travel in m: 12.40...12.80

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 73.0...77.0  
1000 s: (71.0...79.0)

BREAKAWAY

A04

1st version  
1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 1230...1260

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: NAVISTAR #1815517C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of  
delivery of cylinder 1



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 y  
 Edition : 05.10.90  
 Replaces : 8.6.90  
 Test oil : ISO-4113

Combination no. : 0 400 846 579

Injection pump  
 Pump designation : PES6A95D32ORS2779  
 EP type number : 0 410 896 903  
 Governor  
 Governor design. : RQV350...1350AB1248R  
 Governor no. : 0 420 21J 120

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT 360

1st version kW : 126.0  
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75  
 : (2.60...2.80)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

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Rack travel in mm : 12.30...12.40

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Del.quantity cm<sup>3</sup>/ : 8.4...8.6

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100 s: (8.2...8.8)

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Spread cm<sup>3</sup> : 0.3

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100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.1  
 100 s: (1.5...2.3)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
 travel mm : 7.30...7.50  
 2nd speed rpm : 1460  
 travel mm : 8.10...8.50  
 3rd speed rpm : 550  
 travel mm : 3.10...3.70  
 4th speed rpm : 350  
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1350  
 Aneroid pressure h: 900  
 Del.quantity : 84.0...86.0  
 1000 : (82.0...88.0)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1390...1420  
2nd rack travel in: 4.00  
Speed rpm : 1525...1535  
4th rack travel in: 1625  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control Lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 240  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 445  
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 61.5...65.5  
1000 s: (59.5...67.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del. quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks: : NAVISTAR #1816726C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 s  
Edition : 14.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 846 582  
  
Injection pump  
Pump designation : PES6A95D32ORS2796  
EP type number : 0 410 896 901  
Governor  
Governor design. : RQ300/1300AB1253-2R  
Governor no. : 0 420 20. 653

Customer-spec. information  
Customer : DAF

Engine : NS 156G

1st version kW : 156.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
                  : (1.95...2.15)  
Rack travel in mm : 7.50...10.50

A07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 8.3...8.4

100 s: (8.1...8.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 800

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 83.5...84.5

1000 : (81.5...86.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 800

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.40  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack trave: 6.40  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 545...585

TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 12.20...12.60  
2nd speed rpm : 750  
Rack travel in m: 13.90...14.50  
3rd speed rpm : 960  
Rack travel in m: 13.30...13.90  
4th speed rpm : 1055  
Rack travel in m: 12.40...13.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 600  
1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 280  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 250  
Rack travel in m: 11.90...12.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 1290  
Del.quantity cm3/ : 85.0...87.0  
1000 s: (82.5...89.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 57.5...58.5  
1000 s: (55.5...60.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 1320...1330

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p 3  
 Edition : 14.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 583  
 Injection pump  
 Pump designation : PES6A95D32ORS2693Z  
 EP type number : 0 410 896 913  
 Governor  
 Governor design. : RQ300/1300AB1253R  
 Governor no. : 0 420 20. 649

Customer-spec. information  
 Customer : DAF

Engine : NS 156

1st version kW : 156.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00X1.50X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 7.50...10.50

A09

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 8.5...8.6

100 s: (8.3...8.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1000

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 85.5...86.5

1000 : (83.5...88.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 1000

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.90  
Speed rpm : 1325...1340  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:

Speed rpm : 200  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 530...570

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1280  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 290  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 250  
Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 53.5...54.5  
1000 s: (51.5...56.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1325...1340

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p 4  
 Edition : 28.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 585  
 Injection pump  
 Pump designation : PES6A95D32ORS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RQ300/1300AB1253-1R  
 Governor no. : 0 420 20. 650

Customer-spec. information  
 Customer : DAF

Engine : NT 133

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test Lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850  
 Rack travel in mm : 11.20...11.30  
 Del.quantity cm3/ : 7.1...7.2  
 100 s: (6.9...7.4)  
 Spread cm3 : 0.3  
 100 s: (0.6)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 6.6...6.8  
 Del.quantity cm3/ : 0.7...1.1  
 100 s: (0.4...1.3)  
 Spread cm3 : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 800  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 700  
 Del.quantity : 71.5...72.5  
 1000 : (69.5...74.5)  
 Spread cm3 : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 800  
 Rack travel in mm : 20.0  
 Testing:  
 1st rack travel in: 9.50

Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 540...580

#### TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.40...10.60  
2nd speed rpm : 900  
Rack travel in m: 11.50...11.60  
3rd speed rpm : 1000  
Rack travel in m: 11.00...11.40  
4th speed rpm : 1070  
Rack travel in m: 10.60...10.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.20...11.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 255  
Rack travel in m: 10.70...10.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1290

Del.quantity cm<sup>3</sup>/ : 71.0...73.0  
1000 s: (68.5...75.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 50.5...51.5  
1000 s: (48.5...53.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.60...6.80  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 z  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 587  
 Injection pump  
 Pump designation : PES6A95D320RS2779  
 EP type number : 0 410 896 903  
 Governor  
 Governor design. : RQV350...1350AB1251R  
 Governor no. : 0 420 215 122

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA 360

1st version kW : 138.0  
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75  
 : (2.60...2.80)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 12.20...12.30

Del.quantity cm<sup>3</sup>/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.5...2.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.30...7.50

2nd speed rpm : 1460

travel mm : 8.10...8.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Aneroid pressure h: 900

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1405...1435  
2nd rack travel in: 4.00  
Speed rpm : 1540...1550  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control Lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 350...500

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1350  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 850  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 1175  
Rack travel in m: 12.50...12.70  
4th speed rpm : 1050  
Rack travel in m: 13.20...13.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 220  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 435  
Rack travel in m: 12.20...12.60

START CUT-OUT

Speed 1/min : 270 (280)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 850  
Del.quantity cm3/ : 98.0...102.0  
1000 s: (96.0...104.0)  
Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 67.0...71.0  
1000 s: (65.0...73.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 1405...1435

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 145.0...165.0  
1000 s: (140.0...170.0)  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks: : NAVISTAR #1817191C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of  
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 2,1 c
Edition : 14.09.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 862 002
Injection pump
Pump designation : PES2A90D320/3RS2794
EP type number : 0 410 892 001
Governor
Governor design. : RSV300...1000A7C505R
Governor no. : 0 420 233 188

Customer-spec. information
Customer : MWM

Engine : D226B-2

1st version kW : 25.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 9.00...12.00

Firing order : 1- 2

Phasing : 0-90

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00
& maximum rack tra: 21.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 11.50...11.60
Del.quantity cm3/ : 8.5...8.6
100 s: (8.3...8.8)
Spread cm3 : 0.3
100 s: (0.5)

2nd speed rpm : 300.0
Rack travel in mm : 7.5...7.7
Del.quantity cm3/ : 1.2...1.8
100 s: (1.0...2.0)
Spread cm3 : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 85.0...86.0
1000 : (83.0...88.0)
Spread cm3 : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Testing:

1st rack travel in: 10.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
3rd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 335...395

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 500  
Rack travel in m: 11.50...11.70

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.50  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 3,1 b 3  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 863 018  
 Injection pump  
 Pump designation : PES3A90D320/3RS2658  
 EP type number : 0 410 893 004  
 Governor  
 Governor design. : RSV300...1000A7C505R  
 Governor no. : 0 420 23J 188

Customer-spec. information  
 Customer : MWM

Engine : D226B-3

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test Lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 2- 3

Phasing : 0-120-240  
 Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 11.00...11.10  
 Del. quantity cm<sup>3</sup>/ : 8.5...8.6  
 100 s: (8.3...8.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.9...7.1  
 Del. quantity cm<sup>3</sup>/ : 0.9...1.6  
 100 s: (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del. quantity : 85.0...86.0  
 1000 : (83.0...88.0)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 105...113  
 Testing:  
 1st rack travel in: 10.00  
 Speed rpm : 1040...1050  
 2nd rack travel in: 4.00

Speed rpm : 1055...1085  
3rd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 65...73  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 335...395

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 500  
Rack travel in m: 11.00...11.20

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 4,1 b 2  
 Edition : 31.08.90  
 Replaces : 13.12.89  
 Test oil : ISO-4113

Combination no. : 0 400 864 076

Injection pump  
 Pump designation : PES4A90D320/3RS2659  
 EP type number : 0 410 894 028  
 Governor  
 Governor design. : RSV325...1250A0C2182  
 -7R  
 Governor no. : 0 420 233 258

Customer-spec. information  
 Customer : MWM

Engine : TD224/04

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1250

---

Rack travel in mm : 11.50...11.60

---

Del.quantity cm<sup>3</sup>/ : 9.1...9.2

---

100 s: (8.9...9.4)

---

Spread cm<sup>3</sup> : 0.3

---

100 s: (0.5)

2nd speed rpm : 325.0  
 Rack travel in mm : 7.0...7.2  
 Del.quantity cm<sup>3</sup>/ : 0.8...1.4  
 100 s: (0.6...1.6)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Aneroid pressure h: 700  
 Del.quantity : 91.5...92.5  
 1000 : (89.5...94.5)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 45...53

Testing:  
 1st rack travel in: 10.50

Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1325...1355  
3rd rack travel in: 4.00  
Speed rpm : 1340...1370  
4th rack travel in: 1505  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 500  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 890  
Rack travel in m: 11.90...12.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 185  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 90  
Rack travel in m: 11.00...11.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 185  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 79.0...81.0  
1000 s: (76.5...83.5)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 61.0...63.0  
1000 s: (59.0...65.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 132.0...142.0  
1000 s: (129.0...145.0)  
Rack travel in mm : 19.50...21.00

#### Remarks:

: STILL



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 4,1 j  
 Edition : 21.09.90  
 Replaces : 5.3.90  
 Test oil : ISO-4113  
 Combination no. : 0 400 864 077  
 Injection pump  
 Pump designation : PES4A95D410/3RS2789  
 EP type number : 0 410 894 995  
 Governor  
 Governor design. : RSV325...1150A5C2244  
 L  
 Governor no. : 0 420 232 536

Customer-spec. information  
 Customer : KHD

Engine : F4L913

1st version kw : 68.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test Lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150  
 Rack travel in mm : 12.80...12.90  
 Del.quantity cm<sup>3</sup>/ : 9.0...9.2  
 100 s: (8.8...9.4)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)  
 2nd speed rpm : 325.0  
 Rack travel in mm : 8.3...8.5  
 Del.quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Del.quantity : 90.0...92.0  
 1000 : (88.0...94.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 95...103

Testing:  
 1st rack travel in: 11.80  
 Speed rpm : 1190...1200  
 2nd rack travel in: 4.00  
 Speed rpm : 1240...1250  
 3rd rack travel in: 4.00

Speed rpm : 1250...1280  
4th rack travel in: 1415  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 400...460

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 500  
Rack travel in m: 13.20...13.30  
4th speed rpm : 1070  
Rack travel in m: 13.00...13.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 88.5...91.5  
1000 s: (86.0...94.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...135.0  
1000 s: (122.0...138.0)  
Rack travel in mm : 19.50...21.00

Remarks:  
:

#### APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 4,1 b 4  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 864 080  
 Injection pump  
 Pump designation : PES4A90D320/3RS2659  
 EP type number : 0 410 894 028  
 Governor  
 Governor design. : RSV300...1000A7C505R  
 Governor no. : 0 420 23J 188

Customer-spec. information  
 Customer : MWM

Engine : D226B-4

1st version kW : 54.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 11.50...11.60  
 Del. quantity cm<sup>3</sup>/ : 8.8...8.9  
 100 s : (8.6...9.1)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.5...7.7  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
 100 s : (1.0...2.0)  
 Spread cm<sup>3</sup> : 0.2  
 100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del. quantity : 88.5...89.5  
 1000 : (86.5...91.5)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 107...115

Testing:

1st rack travel in: 10.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
3rd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 335...395

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 500  
Rack travel in m: 11.50...11.70

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 o 6
Edition : 21.09.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 864 081
Injection pump
Pump designation : PES4A85D410/3RS2799
EP type number : 0 410 884 944
Governor
Governor design. : RSV325...1250A2C2253
Governor no. : 0 420 232 547

Customer-spec. information
Customer : KHD

Engine : BF4L913

1st version kW : 78.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 000
Inlet press., bar : 1.50
Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
: (2.45...2.65)

A25

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250
Rack travel in mm : 12.40...12.50
Del. quantity cm3/ : 8.7...8.8
100 s : (8.5...9.0)
Spread cm3 : 0.3
100 s : (0.5)

2nd speed rpm : 325.0
Rack travel in mm : 7.8...8.0
Del. quantity cm3/ : 1.0...1.6
100 s : (0.8...1.8)
Spread cm3 : 0.2
100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Aneroid pressure h: 700
Del. quantity : 87.5...88.5
1000 : (85.5...90.5)
Spread cm3 : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 99...107

Testing:
1st rack travel in: 11.40
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1370...1400

3rd rack travel in: 4.00  
Speed rpm : 1395...1425  
4th rack travel in: 1560  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control Lever  
position degrees: 69...77  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 500  
Rack travel in m: 13.10...13.20  
4th speed rpm : 1010  
Rack travel in m: 12.70...12.90

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 13.10...13.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.70  
2nd pressure hPa : 280  
Rack travel in m: 12.00...12.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 88.0...90.0  
1000 s: (85.5...92.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 62.0...64.0  
1000 s: (60.0...66.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 115.0...125.0  
1000 s: (112.0...128.0)  
Rack travel in mm : 17.60...18.00

Remarks:

#### APPLICATION

Wheel loader

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 4,1 k  
 Edition : 28.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 864 082  
 Injection pump  
 Pump designation : PES4A85B410/3RS2799  
 EP type number : 0 410 884 944  
 Governor  
 Governor design. : RS325/1250A0C2254L  
 Governor no. : 0 420 220 011

Customer-spec. information  
 Customer : KHD

Engine : BF4L913

1st version kW : 78.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 8.7...8.8

100 s: (8.5...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 400.0

Del.quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.1...1.9)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 87.5...88.5

1000 : (85.5...90.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 81...89

Testing:

1st rack travel in: 11.40

Speed rpm : 1250...1300

2nd rack travel in: 4.00

Speed rpm : 1370...1400

4th rack travel in: 1450

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: ?

Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 750  
Rack travel in m: 13.10...13.20  
3rd speed rpm : 900  
Rack travel in m: 12.80...13.00  
4th speed rpm : 1000  
Rack travel in m: 12.50...12.80

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.70  
2nd pressure hPa : 390  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 280  
Rack travel in m: 11.90...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 89.0...91.0  
1000 s: (86.5...93.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 62.5...63.5  
1000 s: (60.5...65.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.40

Speed rpm : 1250...1300

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (11.0...19.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (4.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

APPLICATION

Omnibus



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 4,7 c 1  
 Edition : 11.10.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 865 023  
 Injection pump  
 Pump designation : PES5A80D410/3RS2603  
 EP type number : 0 410 885 008  
 Governor  
 Governor design. : RS325/1650AOC2087L  
 Governor no. : 0 420 22U 003

Customer-spec. information  
 Customer : KHD

Engine : F5L912

1st version kW : 62.5  
 Rated speed : 3300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 1.90...2.00  
 : (1.85...2.05)  
 Rack travel in mm : 9.00...12.00

B01

Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288

BASIC SETTING

1st speed rpm : 1490  
 Rack travel in mm : 9.90...10.00  
 Del. quantity cm<sup>3</sup>/ : 5.0...5.1  
 100 s: (4.9...5.3)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.35)

2nd speed rpm : 325  
 Rack travel in mm : 8.70...8.90  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s: (1.5...2.2)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1490  
 Del. quantity : 50.5...51.5  
 1000 : (49.0...53.0)  
 Spread cm<sup>3</sup> : 2.0  
 1000 : (3.5)

RATED SPEED

1st version  
 Control lever  
 position degrees: 95...103

Testing:  
 1st rack travel in: 8.90  
 Speed rpm : 1690...1700  
 2nd rack travel in: 4.00  
 Speed rpm : 1740...1770  
 4th rack travel in: 1900  
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.00

Testing:  
Speed rpm : 100  
Minimum rack trave: 10.80  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.50  
Speed rpm : 450...490

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.90  
Speed rpm : ~~1000~~...1700

Remarks:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 5,1 i  
 Edition : 21.05.90  
 Replaces : 1.2.90  
 Test oil : ISO-4113

Combination no. : 0 400 865 025

Injection pump  
 Pump designation : PESSA80D410/3RS2782  
 EP type number : 0 410 885 999  
 Governor  
 Governor design. : RSV325...1250A5C2239

Governer no. : 0 420 232 526

Customer-spec. information  
 Customer : KHD

Engine : F5L912

1st version kW : 68.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1235

Rack travel in mm : 11.80...11.90

Del.quantity cm<sup>3</sup>/ : 6.9...7.0

100 s: (6.8...7.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.4...7.6

Del.quantity cm<sup>3</sup>/ : 0.8...1.4

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1235

Del.quantity : 69.5...70.5

1000 : (68.0...72.0)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 103...111

Testing:

1st rack travel in: 10.80

Speed rpm : 1275...1285

2nd rack travel in: 4.00

Speed rpm : 1330...1360

3rd rack travel in: 4.00

Speed rpm : 1345...1375  
4th rack travel in: 1510  
Speed rpm : 0.30...1.40

Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:

LOW IDLE 1  
Control lever  
position degrees: 69...77  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1235  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 750  
Rack travel in m: 11.80...12.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 54.5...56.5  
1000 s: (52.5...58.5)  
Speed rpm : 1000  
Del.quantity cm3/ : 63.0...65.0  
1000 s: (61.0...67.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 10.80  
Speed rpm : 1275...1285

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 105.0...115.0  
1000 s: (102.0...118.0)

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 7.40...7.60  
Del.quantity cm3/ : 8.0...14.0  
1000 s: (6.5...15.5)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 5,1 i 1  
 Edition : 31.8.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 865 026  
 Injection pump  
 Pump designation : PES5A85D410/3RS2782  
 EP type number : 0 410 885 999  
 Governor  
 Governor design. : RSV325...900A4C2239-  
 2L  
 Governor no. : 0 420 232 538

Customer-spec. information  
 Customer : KHD

Engine : F5L912F

1st version kW : 42.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 710  
 Rack travel in mm : 10.40...10.50  
 Del.quantity cm<sup>3</sup>/ : 5.1...5.2  
 100 s : (4.9...5.4)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

2nd speed rpm : 325  
 Rack travel in mm : 7.40...7.60  
 Del.quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s : (0.8...1.8)  
 Spread cm<sup>3</sup> : 0.25  
 100 s : (0.45)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 710  
 Del.quantity : 51.5...52.5  
 1000 : (49.5...54.5)  
 Spread cm<sup>3</sup> : 3.0  
 1000 : (5.0)

RATED SPEED

1st version  
 Control lever  
 position degrees: 95...103

Testing:  
 1st rack travel in: 9.40  
 Speed rpm : 752...757  
 2nd rack travel in: 4.00  
 Speed rpm : 798...813  
 4th rack travel in: 945  
 Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 76...84  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.50

Testing:  
Speed rpm : 100  
Minimum rack trave: 18.50  
Speed rpm : 325  
Rack travel in mm : 5.40...5.60

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 103.0...113.0  
1000 s: (100.0...116.0)  
Rack travel in mm : 19.30...19.70

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 7.40...7.60  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (8.0...18.0)  
Spread cm3 : 2.5  
1000 s: (4.5)

Remarks:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 5,9 f 5  
 Edition : 21.09.90  
 Replaces : 27.3.87  
 Test oil : ISO-4113

Combination no. : 0 400 866 109

Injection pump  
 Pump designation : PES6A90D210RS2629  
 EP type number : 0 410 896 075  
 Governor  
 Governor design. : RSV350...1300AOC2139  
 L  
 Governor no. : 0 420 232 374

Customer-spec. information  
 Customer : FORD/GB

Engine : 380

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

---

Rack travel in mm : 12.90...13.00

---

Del. quantity cm<sup>3</sup>/ : 7.2...7.3

---

100 s: (7.0...7.5)

---

Spread cm<sup>3</sup> : 0.3

---

100 s: (0.4)

---

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.5

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del. quantity : 72.0...73.0  
 1000 : (70.0...75.0)

Spread cm<sup>3</sup> : 3.00  
 1000 : (4.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 115...123

Testing:  
 1st rack travel in: 11.90  
 Speed rpm : 1365...1375

2nd rack travel in: 4.00  
 Speed rpm : 1480...1510

3rd rack travel in: 4.00  
 Speed rpm : 1500...1530

4th rack travel in: 1670  
 Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 28...36

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 350

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 500...560

Speed rpm : 650

Maximum rack trave: 1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 1365...1375

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 76.0...90.0

1000 s: (73.0...93.0)

Rack travel in mm : 19.00...21.00

Remarks:

:

At start of delivery, locating pin  
must latch into slit in pointer.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a63  
 Edition : 17.09.90  
 Replaces : 9.7.90  
 Test oil : ISO-4113

Combination no. : 0 400 866 132

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV500...1250AOC2190  
 -28R  
 Governor no. : 0 420 233 231

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT-I 8.3ltr.

1st version kW : 139.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 500.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 101.5...103.5

1000 : (99.5...105.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 10.40  
Speed rpm : 1315...1325  
2nd rack travel in: 4.00  
Speed rpm : 1365...1375  
3rd rack travel in: 4.00  
Speed rpm : 1365...1395  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 5.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 500  
Rack travel in mm : 5.50...5.70

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1315...1325

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 500  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:  
: C.D.C. # 3915687

Star -of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 L 7  
 Edition : 05.10.90  
 Replaces : 2.5.89  
 Test oil : ISO-4113

Combination no. : 0 400 866 139

Injection pump  
 Pump designation : PES6A100D320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV400...1250AOC2190  
 -39R

Governer no. : 0 420 233 245

Customer-spec. information  
 Customer : CDC

Engine : 6 CT 8.3 ltr

1st version kw : 114.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250  
 Rack travel in mm : 9.40...9.50  
 Del. quantity cm<sup>3</sup>/ : 8.6...8.8  
 100 s: (8.4...9.0)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.4...5.6  
 Del. quantity cm<sup>3</sup>/ : 1.9...2.3  
 100 s: (1.6...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del. quantity : 86.0...88.0  
 1000 : (84.0...90.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 54...62

Testing:

1st rack travel in: 8.40  
Speed rpm : 1310...1320  
2nd rack travel in: 4.00  
Speed rpm : 1350...1380  
3rd rack travel in: 4.00  
Speed rpm : 1355...1385  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 28...36  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.40...5.60

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 9.40...9.50  
2nd speed rpm : 750  
Rack travel in m: 9.90...10.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 84.5...88.5  
1000 s: (82.5...90.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 1310...1320

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 145.0...165.0  
1000 s: (140.0...170.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 19.0...23.0  
1000 s: (16.5...25.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3914764

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 v 2  
 Edition : 21.09.90  
 Replaces : 31.7.90  
 Test oil : ISO-4113

Combination no. : 0 400 866 143

Injection pump  
 Pump designation : PES6A95D120RS2773  
 EP type number : 0 410 896 904  
 Governor  
 Governor design. : RSV350...1250A0C2237  
 R  
 Governor no. : 0 420 233 240

Customer-spec. information  
 Customer : CUMMINS

Engine : 6BT

1st version kW : 118.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.10...2.20  
 : (2.05...2.25)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

---

Rack travel in mm : 9.40...9.50

---

Del.quantity cm<sup>3</sup>/ : 8.6...8.8  
 100 s : (8.3...9.0)

---

Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.1...6.3  
 Del.quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s : (0.7...1.8)

Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del.quantity : 86.0...88.0  
 1000 : (83.5...90.5)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 91...99

Testing:  
 1st rack travel in: 8.40  
 Speed rpm : 1290...1300

2nd rack travel in: 4.00  
Speed rpm : 1355...1385  
3rd rack travel in: 4.00  
Speed rpm : 1370...1400  
4th rack travel in: 1530  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.0

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 465...525

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 9.40...9.50  
2nd speed rpm : 500  
Rack travel in m: 9.40...9.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm3/ : 69.5...72.5  
1000 s: (67.5...74.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.40  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 107.0...117.0  
1000 s: (104.0...120.0)  
Rack travel in mm : 13.30...13.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.10...6.30  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)

Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark 11.5° cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 u  
 Edition : 31.08.90  
 Replaces : 21.5.90  
 Test oil : ISO-4113

Combination no. : 0 400 866 152

Injection pump  
 Pump designation : PES6A85D410/3RS2783  
 EP type number : 0 410 886 893  
 Governor  
 Governor design. : RSV325...1250A5C2239  
 Governor no. : 0 420 232 526

Customer-spec. information  
 Customer : KHD

Engine : F6L912F

1st version kW : 82.0  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1235

Rack travel in mm : 11.80...11.90

Del.quantity cm<sup>3</sup>/ : 6.9...7.0  
 100 s: (6.7...7.2)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

2nd speed rpm : 325.0  
 Rack travel in mm : 8.4...8.6  
 Del.quantity cm<sup>3</sup>/ : 0.8...1.4  
 100 s: (0.6...1.6)

Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1235  
 Del.quantity : 69.5...70.5  
 1000 : (67.5...72.5)

Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 103...111

Testing:  
 1st rack travel in: 10.80  
 Speed rpm : 1275...1285  
 2nd rack travel in: 4.00  
 Speed rpm : 1330...1360  
 3rd rack travel in: 4.00

Speed rpm : 1345...1375  
4th rack travel in: 1510  
Speed rpm : 0.30...1.40

Spread cm<sup>3</sup> : 2.50  
1000 s: (4.50)

Remarks:

LOW IDLE 1  
Control lever  
position degrees: 69...77  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 420...480

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1235  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 750  
Rack travel in m: 11.80...12.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 55.5...57.5  
1000 s: (53.0...60.0)  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 64.0...66.0  
1000 s: (61.5...68.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.80  
Speed rpm : 1275...1285

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 105.0...115.0  
1000 s: (102.0...118.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 8.40...8.60  
Del.quantity cm<sup>3</sup>/ : 8.0...14.0  
1000 s: (6.0...16.0)



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 p  
 Edition : 05.10.90  
 Replaces : 1.2.90  
 Test oil : ISO-4113

Combination no. : 0 400 866 153

Injection pump  
 Pump designation : PES6A100D320/3RS2763  
 EP type number : 0 410 806 006  
 Governor  
 Governor design. : RSV400...950AOC2238-1R  
 Governor no. : 0 420 233 255

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CT 8.3

1st version kw : 145.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.9...7.1

Del.quantity cm<sup>3</sup>/ : 3.2...3.6

100 s: (3.0...3.8)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 900

Del.quantity : 122.0...124.0

1000 : (120.0...126.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.40  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1045...1075  
3rd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1150  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.90...7.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.40...12.50

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 220  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 340  
Rack travel in m: 11.90...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 86.0...90.0  
1000 s: (84.0...92.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.90...7.10  
Del.quantity cm3/ : 32.5...36.5  
1000 s: (30.5...38.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: C.D.C # 3917577

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 u 1  
 Edition : 31.8.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 162  
 Injection pump  
 Pump designation : PES6A85D410/3RS2783  
 EP type number : 0 410 886 893  
 Governor  
 Governor design. : RSV325...900A4C2239-  
 2L  
 Govenner no. : 0 420 232 538  
 Customer-spec. information  
 Customer : KHD  
 Engine : F5L912F  
 1st version kW : 51.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 313 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X2,00X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 ((0.75))

BASIC SETTING

1st speed rpm : 710  
 Rack travel in mm : 10.40...10.50  
 Del.quantity cm3/ : 5.1...5.2  
 100 s : (4.9...5.4)  
 Spread cm3 : 0.3  
 100 s : (0.5)  
 2nd speed rpm : 325  
 Rack travel in mm : 7.40...7.60  
 Del.quantity cm3/ : 0.9...1.5  
 100 s : (0.7...1.7)  
 Spread cm3 : 0.2  
 100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever positio.  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 710  
 Del.quantity : 51.5...52.5  
 1000 : (49.5...54.5)  
 Spread cm3 : 3.0  
 1000 : (5.0)

RATED SPEED

1st version  
 Control lever  
 position degrees: 95...103

Testing:  
 1st rack travel in: 9.400  
 Speed rpm : 752...757  
 2nd rack travel in: 4.00  
 Speed rpm : 798...813  
 4th rack travel in: 945  
 Speed rpm : 0.30...0.70

LOW IDLE 1

Control lever

position degrees: 76...84

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 5.50

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 325

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 370...430

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 103.0...113.0

1000 s: (100.0...116.0)

Rack travel in mm : 19.20...19.70

LOW IDLE

Speed rpm : 325

Rack travel in mm : 7.40...7.60

Del.quantity cm<sup>3</sup>/ : 9.0...15.0

1000 s: (7.0...17.0)

Spread cm<sup>3</sup> : 2.5

1000 s: (4.5)

Remarks:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 6,2 e11  
 Edition : 28.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 166  
 Injection pump  
 Pump designation : PES6A90D320/3RS2660  
 EP type number : 0 410 896 078  
 Governor  
 Governor design. : RSV300...1000A7C505R  
 Governor no. : 0 420 23J 188

Customer-spec. information  
 Customer : MWM

Engine : D226B-6

1st version kW : 139.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : (0.50 (0.75))

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 11.50...11.60  
 Del. quantity cm<sup>3</sup>/ : 8.5...8.6  
 100 s: (8.3...8.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.5...7.7  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
 100 s: (1.0...2.0)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del. quantity : 85.0...86.0  
 1000 : (83.0...88.0)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 107...115

Testing:

1st rack travel in: 10.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
3rd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 335...395

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 500  
Rack travel in m: 11.50...11.70

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a83  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 167  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190  
 -50R  
 Governor no. : 0 420 233 276

Customer-spec. information  
 Customer : C.D.C

Engine : 6 CT 8

1st version kW : 138.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm<sup>3</sup>/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.5...2.3)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 109.5...111.5

1000 : (107.5...113.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 10.40  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.70...5.90

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 750  
Rack travel in m: 12.60...12.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 127.5...131.5  
1000 s: (125.5...133.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (135.0...165.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.70...5.90  
Del. quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3919497

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a84  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 866 168

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 EP type number : 9 410 230 025  
 Governor  
 Governor design. : RSV400...1100AOC2190  
 -52R  
 Governor no. : 0 420 233 278

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CTA 8.3ltr

1st version kW : 174.5  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 12.7...12.9

100 s: (12.5...13.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.5...2.3)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 127.0...129.0

1000 : (125.0...131.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
3rd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 16.20...16.40

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

: C.D.C. # 3917456

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a 9  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 874 238 C  
 Injection pump  
 Pump designation : PES4A95D41ORS2685  
 EP type number : 0 410 894 996  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 L  
 Governor no. : 0 420 232 387  
 Customer-spec. information  
 Customer : LIEBHERR  
 Engine : D904 T  
 1st version kW : 100.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 008  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 14.20...14.30  
 Del. quantity cm<sup>3</sup>/ : 13.7...13.9  
 100 s: (13.5...14.1)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.3...6.5  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del. quantity : 137.0...139.0  
 1000 : (135.0...141.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 90...98

Testing:

1st rack travel in: 13.20  
 Speed rpm : 1040...1050  
 2nd rack travel in: 4.00  
 Speed rpm : 1055...1085  
 3rd rack travel in: 4.00  
 Speed rpm : 1080...1110  
 4th rack travel in: 1245  
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
 position degrees: 63...71  
 Setting point w/out bumper spring  
 Speed rpm : 400  
 Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
 Minimum rack trave: 19.50  
 Speed rpm : 400  
 Rack travel in mm : 6.30...6.50  
 Rack travel in mm : 2.00  
 Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version  
 1st speed rpm : 1000  
 Rack travel in m: 14.20...14.30  
 2nd speed rpm : 500  
 Rack travel in m: 14.20...14.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
 Del.quantity cm3/ : 129.5...132.5  
 1000 s: (127.0...135.0)  
 Speed rpm : 750  
 Del.quantity cm3/ : 134.0...137.0  
 1000 s: (131.5...139.5)

BREAKAWAY

1st version

1mm rack travel less than  
 full load rack tr: 13.20  
 Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 120.0...130.0  
 1000 s: (117.0...133.0)  
 Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400  
 Rack travel in mm : 6.50...6.70  
 Del.quantity cm3/ : 10.0...16.0  
 1000 s: (7.5...18.5)  
 Spread cm3 : 3.50  
 1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a10  
 Edition : 24.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 874 238 K  
 Injection pump  
 Pump designation : PES4A95D410RS2685  
 EP type number : 0 410 894 996  
 Governor  
 Governor design. : RSV400...1000A1C2187

Governer no. : 0 420 232 387

Customer-spec. information  
 Customer : LIEBHERR

Engine : D904 TB

1st version kW : 74.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 10.20...10.30

Del. quantity cm<sup>3</sup>/ : 9.1...9.3

100 s: (8.9...9.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.3...6.5  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del. quantity : 137.0...139.0  
 1000 : (135.0...141.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 91...99

Testing:  
1st rack travel in: 9.20  
Speed rpm : 1020...1040  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
3rd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 65...73  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.9

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 400  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 520...580

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 10.50...10.60  
3rd speed rpm : 720  
Rack travel in m: 10.30...10.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm3/ : 82.5...85.5  
1000 s: (80.0...88.0)  
Speed rpm : 700  
Del.quantity cm3/ : 91.0...94.0  
1000 s: (88.5...96.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.20  
Speed rpm : 1020...1040

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a11  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 874 238L  
 Injection pump  
 Pump designation : PES4A95D410RS2685  
 EP type number : 0 410 894 996  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 L  
 Governor no. : 0 420 232 387  
 Customer-spec. information  
 Customer : LIEBHERR  
 Engine : D904 T  
 1st version kw : 100.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 008  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_  
 BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27  
 Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 14.20...14.30  
 Del.quantity cm<sup>3</sup>/ : 13.7...13.9  
 100 s: (13.5...14.1)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.3...6.5  
 Del.quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del.quantity : 137.0...139.0  
 1000 : (135.0...141.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 90...98

Testing:

1st rack travel in: 13.20  
 Speed rpm : 1040...1050  
 2nd rack travel in: 4.00  
 Speed rpm : 1055...1085  
 3rd rack travel in: 4.00  
 Speed rpm : 1080...1110  
 4th rack travel in: 1245  
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
 position degrees: 63...71  
 Setting point w/out bumper spring  
 Speed rpm : 400  
 Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
 Minimum rack travel: 19.50  
 Speed rpm : 400  
 Rack travel in mm : 6.30...6.50  
 Rack travel in mm : 2.00  
 Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version  
 1st speed rpm : 1000  
 Rack travel in m: 14.20...14.30  
 2nd speed rpm : 500  
 Rack travel in m: 14.20...14.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
 Del.quantity cm3/ : 129.5...132.5  
 1000 s: (127.0...135.0)  
 Speed rpm : 750  
 Del.quantity cm3/ : 134.0...137.0  
 1000 s: (131.5...139.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20  
 Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 120.0...130.0  
 1000 s: (117.0...133.0)  
 Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400  
 Rack travel in mm : 6.50...6.70  
 Del.quantity cm3/ : 10.0...16.0  
 1000 s: (7.5...18.5)  
 Spread cm3 : 3.50  
 1000 s: (5.50)

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a12  
 Edition : 24.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 874 238N  
 Injection pump  
 Pump designation : PES4A95D410RS2685  
 EP type number : 0 410 894 996  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 Governor no. : 0 420 232 387  
 Customer-spec. information  
 Customer : LIEBHERR  
 Engine : D904 TB  
 1st version kW : 74.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test Lines : 1 680 750 008  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1-3-4-2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 980  
 Rack travel in mm : 11.10...11.20  
 Del. quantity cm<sup>3</sup>/ : 9.8...10.0  
 100 s: (9.6...10.2)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.3...6.5  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 980  
 Del. quantity : 98.5...100.5  
 1000 : (96.5...102.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 91...99

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1020...1041  
2nd rack travel in: 4.00  
Speed rpm : 1035...1065  
3rd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.9

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 400  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 520...580

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 500  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 760  
Rack travel in m: 11.30...11.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm3/ : 93.0...96.0  
1000 s: (90.5...98.5)  
Speed rpm : 700  
Del.quantity cm3/ : 101.5...104.5  
1000 s: (99.0...107.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1020...1041

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a13  
 Edition : 24.07.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 874 238N

Injection pump  
 Pump designation : PES4A95D410RS2685  
 EP type number : 0 410 894 996  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 L  
 Governor no. : 0 420 232 387

Customer-spec. information  
 Customer : LIEBHERR

Engine : D904 T

1st version kW : 94.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 980

---

Rack travel in mm : 13.00...13.10

---

Del. quantity cm<sup>3</sup>/ : 12.7...12.9  
 100 s: (12.5...13.1)

---

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.3...6.5  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 980  
 Del. quantity : 127.0...129.0  
 1000 : (125.0...131.0)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control Lever  
 position degrees: 90...98

Testing:

1st rack travel in: 12.00  
 Speed rpm : 1020...1040  
 2nd rack travel in: 4.00  
 Speed rpm : 1035...1065  
 3rd rack travel in: 4.00  
 Speed rpm : 1060...1090  
 4th rack travel in: 1220  
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
 position degrees: 63...71  
 Setting point w/out bumper spring  
 Speed rpm : 400  
 Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
 Minimum rack travel: 19.50  
 Speed rpm : 400  
 Rack travel in mm : 6.30...6.50  
 Rack travel in mm : 2.00  
 Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version  
 1st speed rpm : 980  
 Rack travel in m: 13.00...13.10  
 2nd speed rpm : 500  
 Rack travel in m: 13.40...13.50  
 3rd speed rpm : 825  
 Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
 Del.quantity cm3/ : 132.5...135.5  
 1000 s: (130.0...138.0)

BREAKAWAY

1st version

1mm rack travel less than  
 full load rack tr: 10.10  
 Speed rpm : 1020...1040

STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 120.0...130.0  
 1000 s: (117.0...133.0)  
 Rack travel in mm : 19.50...21.00

LOW IDLE

C08

Speed rpm : 400  
 Rack travel in mm : 6.50...6.70  
 Del.quantity cm3/ : 10.0...16.0  
 1000 s: (7.5...18.5)  
 Spread cm3 : 3.50  
 1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 8,4 a 4  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 3220  
 Injection pump  
 Pump designation : PES6A95D41ORS2689  
 EP type number : 0 410 896 916  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 L  
 Governor no. : 0 420 232 387

Customer-spec. information  
 Customer : LIEBHERR

Engine : D906 T

1st version kW : 150.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 40...45  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 13.10...13.20  
 Del. quantity cm<sup>3</sup>/ : 12.7...12.9  
 100 s: (12.5...13.1)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.3...6.5  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del. quantity : 127.0...129.0  
 1000 : (125.0...131.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 90...98

Testing:

1st rack travel in: 12.10  
 Speed rpm : 1040...1050  
 2nd rack travel in: 4.00  
 Speed rpm : 1050...1080  
 3rd rack travel in: 4.00  
 Speed rpm : 1080...1110  
 4th rack travel in: 1245  
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
 position degrees: 63...71  
 Setting point w/out bumper spring  
 Speed rpm : 400  
 Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
 Minimum rack travel: 19.50  
 Speed rpm : 400  
 Rack travel in mm : 6.30...6.50  
 Rack travel in mm : 2.00  
 Speed rpm : 515...575

TORQUE CONTROL

Torque control curve - 1st version  
 1st speed rpm : 1000  
 Rack travel in m: 13.10...13.20  
 2nd speed rpm : 500  
 Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
 Del.quantity cm3/ : 119.5...122.5  
 1000 s: (117.0...125.0)  
 Speed rpm : 800  
 Del.quantity cm3/ : 125.5...128.5  
 1000 s: (123.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than  
 full load rack tr: 9.40  
 Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 120.0...130.0  
 1000 s: (117.0...133.0)  
 Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400  
 Rack travel in mm : 6.30...6.50  
 Del.quantity cm3/ : 10.0...16.0  
 1000 s: (7.5...18.5)  
 Spread cm3 : 3.50  
 1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 8,4 a 5  
 Edition : 07.02.89  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 322D  
 Injection pump  
 Pump designation : PES6A95D41ORS2689  
 EP type number : 0 410 896 916  
 Governor  
 Governor design. : RSV400...1000A1C2187  
 L  
 Governor no. : 0 420 232 387  
 Customer-spec. information  
 Customer : LIEBHERR  
 Engine : D906 TB  
 1st version kW : 120.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 40...45  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 008  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 11.30...11.50  
 Del. quantity cm<sup>3</sup>/ : 10.2...10.4  
 100 s: (10.0...10.6)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 6.3...6.5  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 980  
 Del. quantity : 102.0...104.0  
 1000 : (100.0...106.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 89...97

Testing:  
1st rack travel in: 10.30  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
3rd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1220  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 63...71  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.9

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 400  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 510...570

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 500  
Rack travel in m: 11.30...11.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 105.5...108.5  
1000 s: (103.0...111.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.40  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 400

Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w 1  
 Edition : 17.09.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113

Combination no. : 0 400 876 350

Injection pump  
 Pump designation : PES6A100D410RS2754  
 EP type number : 0 410 806 002  
 Governor  
 Governor design. : RSV425...1100A2C2234

Governer no. : 0 420 232 498

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076TRW04

1st version kW : 122.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm<sup>3</sup>/ : 10.0...10.2

100 s : (9.8...10.4)

Spread cm<sup>3</sup> : 0.4

100 s : (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 2.6...3.0

100 s : (2.4...3.2)

Spread cm<sup>3</sup> : 0.6

100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 100.5...102.5

1000 : (98.5...104.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control Lever

position degrees: 41...49

Testing:

1st rack travel in: 9.60  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.80...6.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.60...10.70  
2nd speed rpm : 700  
Rack travel in m: 11.80...12.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 125.0...128.0  
1000 s: (122.5...130.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 9.60  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (24.0...32.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE29182

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w 2  
 Edition : 17.09.90  
 Replaces : 2.5.89  
 Test oil : ISO-4113

Combination no. : 0 400 876 351

Injection pump  
 Pump designation : PES6A100D410RS2754  
 EP type number : 0 410 806 002  
 Governor  
 Governor design. : RSV425...1100A2C2234  
 -1L  
 Governor no. : 0 420 232 499

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076 TRW01

1st version kW : 106.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.70...9.80

Del.quantity cm<sup>3</sup>/ : 8.9...9.1

100 s: (8.7...9.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 2.6...3.0

100 s: (2.4...3.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 89.0...91.0

1000 : (87.0...93.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 8.70  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.90...6.10

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.70...9.80  
2nd speed rpm : 700  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 110.5...113.5  
1000 s: (108.0...116.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.70  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (24.0...32.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks: : JOHN DEERE # RE29303

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w 4  
 Edition : 17.09.90  
 Replaces : 2.5.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 354  
 Injection pump  
 Pump designation : PES6A100D410RS2754  
 EP type number : 0 410 806 002  
 Governor  
 Governor design. : RSV425...1100A2C2235  
 L  
 Governor no. : 0 420 232 511

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076TRW06

1st version kw : 98.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 101  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 9.00...9.10  
 Del.quantity cm<sup>3</sup>/ : 8.3...8.5  
 100 s: (8.1...8.7)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.6)

2nd speed rpm : 425.0  
 Rack travel in mm : 5.7...5.9  
 Del.quantity cm<sup>3</sup>/ : 2.6...3.0  
 100 s: (2.4...3.2)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 83.5...85.5  
 1000 : (81.5...87.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 41...49

Testing:

1st rack travel in: 8.00  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.70...5.90

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.00...9.10  
2nd speed rpm : 650  
Rack travel in m: 9.50...9.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 103.0...106.0  
1000 s: (100.5...108.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.00  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (24.0...32.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE36069

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 2  
 Edition : 17.09.90  
 Replaces : 6.3.90  
 Test oil : ISO-4113

Combination no. : 0 400 876 360

Injection pump  
 Pump designation : PES6A100D410RS2762  
 EP type number : 0 410 806 003  
 Governor  
 Governor design. : RSV425...1100A2C2225  
 L  
 Governor no. : 9 420 234 176

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076ARW-06

1st version kW : 146.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

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Rack travel in mm : 11.80...11.90

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Del.quantity cm<sup>3</sup>/ : 11.4...11.6  
 100 s: (11.2...11.8)

---

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.6)

2nd speed rpm : 425.0  
 Rack travel in mm : 5.7...5.9  
 Del.quantity cm<sup>3</sup>/ : 2.6...3.0  
 100 s: (2.4...3.2)

Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 900  
 Del.quantity : 114.0...116.0  
 1000 : (112.0...118.0)

Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 40...48

Testing:

1st rack travel in: 10.80  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 650  
Rack travel in m: 13.70...13.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 535  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 720  
Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 650  
Del.quantity cm3/ : 147.5...150.5  
1000 s: (145.0...153.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 129.0...133.0  
1000 s: (126.0...136.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.80  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...120.0  
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.70...5.90  
Del.quantity cm3/ : 26.0...30.0  
1000 s: (24.0...32.0)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE29298

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

The stop position of the control rod  
must be easily reached with the stop  
lever



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 e 1  
 Edition : 17.09.90  
 Replaces : 8.8.90  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 372  
 Injection pump  
 Pump designation : PES6A100D410RS2764-1  
 EP type number : 0 410 806 007  
 Governor  
 Governor design. : RSV600...1100A2C2161  
 -7L  
 Governor no. : 0 420 232 540

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466AZ003

1st version kW : 164.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 457 413 010

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 190...200

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del. quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 600.0

Rack travel in mm : 6.0...6.2

Del. quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.5...2.3)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 126.5...128.5

1000 : (124.5...130.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever  
position degrees: 37...45

Testing:

1st rack travel in: 12.10  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1195...1205  
3rd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 600  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 600  
Rack travel in mm : 6.00...6.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.30...9.50

Measurement

Speed 1/min : 500

1st pressure hPa : 175  
Rack travel in m: 10.30...10.40  
2nd pressure hPa : 280  
Rack travel in m: 12.10...12.50  
3rd pressure hPa : 900  
Rack travel in m: 13.10...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 68.0...72.0  
1000 s: (66.0...74.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...200.0  
1000 s: (175.0...205.0)

LOW IDLE

Speed rpm : 600  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (15.0...23.0)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE44661  
Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

The stop position of the control rod  
must be easily reached with the stop  
lever

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 e 2  
 Edition : 17.09.90  
 Replaces : 9.7.90  
 Test oil : ISO-4113  
  
 Combination no. : 0 400 876 373  
  
 Injection pump  
 Pump designation : PES6A100D410RS2764-1  
 EP type number : 0 410 806 007  
 Governor  
 Governor design. : RSV600...1100A2C2161  
 -8L  
 Governor no. : 0 420 232 541

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466AZ004

1st version kw : 150.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 457 413 010

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 190...200

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.40...12.50

Del. quantity cm<sup>3</sup>/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 600.0

Rack travel in mm : 6.3...6.5

Del. quantity cm<sup>3</sup>/ : 1.9...2.3

100 s: (1.7...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 117.5...119.5

1000 : (115.5...121.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control Lever  
position degrees: 41...49

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1155...1165  
2nd rack travel in: 4.00  
Speed rpm : 1220...1230  
3rd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control Lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 600  
Rack travel in mm : 5.9

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 600  
Rack travel in mm : 6.30...6.50

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 750  
Rack travel in m: 14.00...14.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.60...9.80

Measurement  
Speed 1/min : 500

1st pressure hPa : 95  
Rack travel in m: 10.60...10.70  
2nd pressure hPa : 200  
Rack travel in m: 12.60...13.00  
3rd pressure hPa : 900  
Rack travel in m: 14.00...14.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 140.5...144.5  
1000 s: (138.5...146.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 70.5...74.5  
1000 s: (68.5...76.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 1155...1165

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (175.0...205.0)

#### LOW IDLE

Speed rpm : 600  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 19.0...23.0  
1000 s: (17.0...25.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE44662  
Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1.

The stop position of the control rod  
must be easily reached with the stop  
lever

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 a  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 375  
 Injection pump  
 Pump designation : PES6A95D32ORS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300A0C2248  
 -2R  
 Governor no. : 0 420 233 272

Customer-spec. information  
 Customer : DAF

Engine : NT 119

1st version kW : 119.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 6.1...6.2

100 s: (5.9...6.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del. quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del. quantity : 61.5...62.5

1000 : (59.5...64.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever  
position degrees: 103...111

Testing:  
1st rack travel in: 9.30  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1385...1415  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control Lever  
position degrees: 73...81  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 500  
Rack travel in m: 11.60...11.70  
4th speed rpm : 1025  
Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1290  
Del. quantity cm<sup>3</sup>/ : 68.0...70.0  
1000 s: (65.5...72.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.30  
Speed rpm : 1340...1350

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del. quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 q 1  
 Edition : 28.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 375  
 Injection pump  
 Pump designation : PES6A95D32ORS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300AOC2251  
 R  
 Governor no. : 0 420 233 272

Customer-spec. information  
 Customer : DAF

Engine : NT 119

1st version kw : 119.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 6.1...6.2

100 s: (5.9...6.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.0...6.2  
 Del.quantity cm<sup>3</sup>/ : 0.7...1.1  
 100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Del.quantity : 61.5...62.5  
 1000 : (59.5...64.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 103...111

Testing:  
1st rack travel in: 9.30  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1385...1415  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 73...81  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 500  
Rack travel in m: 11.60...11.70  
4th speed rpm : 950  
Rack travel in m: 10.90...11.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1290  
Del.quantity cm<sup>3</sup>/ : 68.0...70.0  
1000 s: (65.5...72.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.30  
Speed rpm : 1340...1350

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 r  
 Edition : 14.09.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 876 376

Injection pump  
 Pump designation : PES6A95D32ORS2796  
 EP type number : 0 410 896 901  
 Governor  
 Governor design. : RSV300...1300AOC2248  
 -1R  
 Governor no. : 0 420 233 273

Customer-spec. information  
 Customer : DAF

Engine : NS 156G

1st version kW : 156.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

D01

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

---

Rack travel in mm : 12.70...12.80

---

Del.quantity cm<sup>3</sup>/ : 8.3...8.4

---

100 s: (8.1...8.6)

---

Spread cm<sup>3</sup> : 0.3

---

100 s: (0.6)

---

2nd speed rpm : 300.0  
 Rack travel in mm : 6.4...6.6  
 Del.quantity cm<sup>3</sup>/ : 0.6...1.0  
 100 s: (0.3...1.2)

---

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 1000  
 Del.quantity : 83.5...84.5  
 1000 : (81.5...86.5)

---

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version

Control Lever  
position degrees: 100...108

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1385...1415  
3rd rack travel in: 4.00  
Speed rpm : 1405...1435  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control Lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 570...630

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 500  
Rack travel in m: 13.50...13.60  
4th speed rpm : 1080  
Rack travel in m: 12.90...13.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.70...12.80

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 280  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 250  
Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1290  
Del.quantity cm3/ : 85.0...87.0  
1000 s: (82.5...89.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 57.5...58.5  
1000 s: (55.5...60.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 1320...1330

LOW IDLE  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60  
Del.quantity cm3/ : 6.0...10.0  
1000 s: (3.5...12.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 q 2  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 377  
 Injection pump  
 Pump designation : PES6A95D32ORS2693Z  
 EP type number : 0 410 896 913  
 Governor  
 Governor design. : RSV300...1300AOC2248  
 -1R  
 Governor no. : 0 420 233 273

Customer-spec. information  
 Customer : DAF

Engine : NS156

1st version kW : 156.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 8.5...8.6

100 s: (8.3...8.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm<sup>3</sup>/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 85.5...86.5

1000 : (83.5...88.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 101...109

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1395...1425  
3rd rack travel in: 4.00  
Speed rpm : 1430...1460  
4th rack travel in: 1590  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 550...610

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 500  
Rack travel in m: 12.40...12.50  
3rd speed rpm : 1300  
Rack travel in m: 11.80...12.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.90...12.00

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 290  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 250  
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 53.5...54.5  
1000 s: (51.5...56.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 q 3  
 Edition : 14.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 378  
 Injection pump  
 Pump designation : PES6A95D320RS2693  
 EP type number : 0 410 896 914  
 Governor  
 Governor design. : RSV300...1300AOC2248  
 -2R  
 Governor no. : 0 420 233 274

Customer-spec. information  
 Customer : DAF

Engine : NT 133

1st version kW : 133.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850  


---

 Rack travel in mm : 11.20...11.30  


---

 Del.quantity cm<sup>3</sup>/ : 7.1...7.2  


---

 100 s: (6.9...7.4)  


---

 Spread cm<sup>3</sup> : 0.3  


---

 100 s: (0.6)  


---

 2nd speed rpm : 300.0  
 Rack travel in mm : 6.0...6.2  
 Del.quantity cm<sup>3</sup>/ : 0.7...1.1  
 100 s: (0.4...1.3)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 700  
 Del.quantity : 71.5...72.5  
 1000 : (69.5...74.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 103...111

Testing:

1st rack travel in: 9.50  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 73...81  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 500  
Rack travel in m: 11.50...11.60  
4th speed rpm : 1045  
Rack travel in m: 10.90...11.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.20...11.30

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 250  
Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700

Speed rpm : 1290  
Del.quantity cm3/ : 73.0...75.0  
1000 s: (70.5...77.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 50.5...51.5  
1000 s: (48.5...53.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 7,0 k 1  
 Edition : 14.09.90  
 Replaces : 12.9.86  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 455  
 Injection pump  
 Pump designation : PE6P110A32ORS367Y  
 EP type number : 0 411 816 132  
 Governor  
 Governor design. : RQV250...1000PA394  
 Governor no. : 0 421 813 241

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TMD 70 C

1st version kW : 154.5  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 9.70...9.80

Del.quantity cm<sup>3</sup>/ : 8.5...8.7

100 s : (8.2...9.0)

Spread cm<sup>3</sup> : 0.4

100 s : (0.8)

2nd speed rpm : 250.0

Rack travel in mm : 4.9...5.1

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 700

Del.quantity : 85.0...87.0

1000 : (82.0...90.0)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 8.70

Speed rpm : 1050...1060

2nd rack travel in: 4.00

Speed rpm : 1110...1140

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 4.8

Testing:

Speed rpm : 100  
Minimum rack trave: 6.50  
Speed rpm : 250  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 350...410

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.70  
Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 165.0...200.0  
1000 s: (161.0...204.0)

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.90...5.10  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.00  
1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

APPLICATION

Navy



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 x2  
 Edition : 08.06.90  
 Replaces : 16.2.90  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 540  
 Injection pump  
 Pump designation : PE6P110A32ORS407-1  
 EP type number : 0 411 816 147  
 Governor  
 Governor design. : RQ275/1000PA861  
 Governor no. : 0 421 80 397

Customer-spec. information  
 Customer : DAF

Engine : LT 195

1st version kW : 195.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.80...12.90

Del.quantity cm<sup>3</sup>/ : 15.3...15.5

100 s: (15.0...15.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.2...7.4

Del.quantity cm<sup>3</sup>/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 153.0...155.0

1000 : (150.5...157.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.40

Speed rpm : 1030...1045

2nd rack travel in: 4.00

Speed rpm : 1100...1130

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 7.3

Testing:  
Speed rpm : 100  
Minimum rack trave: 8.40  
Speed rpm : 275  
Rack travel in mm : 7.20...7.40  
Rack travel in mm : 2.50  
Speed rpm : 340...380

TORQUE CONTROL  
Dimension a mm : 0.25  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 600  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 900  
Rack travel in m: 12.50...12.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.80...12.90

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 340  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 310  
Rack travel in m: 12.10...12.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 980  
Del.quantity cm<sup>3</sup>/ : 146.5...148.5  
1000 s: (142.5...152.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.5...134.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1030...1045

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...260.0  
1000 s: (216.0...264.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 7.20...7.40  
Del.quantity cm<sup>3</sup>/ : 14.0...19.0  
1000 s: (11.5...21.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 x5  
 Edition : 10.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 540Z  
 Injection pump  
 Pump designation : PE6P110A32ORS407-1  
 EP type number : 0 411 816 147  
 Governor  
 Governor design. : RQ275/1000PA861  
 Governor no. : 0 421 80 397

Customer-spec. information  
 Customer : DAF

Engine : LT 195 MBG

1st version kW : 195.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 15.3...15.5

100 s: (15.0...15.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

Del.quantity : 153.0...155.0

1000 : (150.5...157.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.40

Speed rpm : 1030...1045

2nd rack travel in: 4.00

Speed rpm : 1100...1130

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 7.3

Testing:

Speed rpm : 100  
Minimum rack trave: 8.40  
Speed rpm : 275  
Rack travel in mm : 7.20...7.40  
Rack travel in mm : 2.50  
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.25  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 600  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 900  
Rack travel in m: 12.50...12.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 240  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 190  
Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 980  
Del.quantity cm3/ : 146.5...148.5  
1000 s: (142.5...152.5)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 115.5...117.5  
1000 s: (113.0...120.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1030...1045

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...260.0  
1000 s: (216.0...264.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 7.20...7.40  
Del.quantity cm3/ : 14.0...19.0  
1000 s: (11.5...21.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid  
the start position must be reached.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 x3  
 Edition : 19.06.90  
 Replaces : 2.6.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 541

Injection pump  
 Pump designation : PE6P110A32ORS407-1  
 EP type number : 0 411 816 147  
 Governor  
 Governor design. : RQ275/1100PA864  
 Governor no. : 0 421 80 400

Customer-spec. information  
 Customer : DAF

Engine : LT 210

1st version kW : 210.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

---

Rack travel in mm : 12.90...13.00

---

Del.quantity cm<sup>3</sup>/ : 15.5...15.7  
 100 s : (15.2...15.9)

---

Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

2nd speed rpm : 275.0  
 Rack travel in mm : 7.2...7.4  
 Del.quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s : (1.1...2.1)

Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 700  
 Del.quantity : 155.0...157.0  
 1000 : (152.5...159.5)

Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 15.8

Testing:  
 1st rack travel in: 11.50  
 Speed rpm : 1135...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1180...1210  
 4th rack travel in: 1300  
 Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 7.3

Testing:

Speed rpm : 100

Minimum rack travel: 8.40

Speed rpm : 275

Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.00

Speed rpm : 350...390

TORQUE CONTROL

Dimension a mm : 0.25

Torque control curve - 1st version

1st speed rpm : 1080

Rack travel in m: 12.50...12.60

2nd speed rpm : 600

Rack travel in m: 13.10...13.30

3rd speed rpm : 850

Rack travel in m: 12.80...12.90

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 12.90...13.00

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 310

Rack travel in m: 12.60...12.70

3rd pressure hPa : 270

Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 1080

Del.quantity cm3/ : 148.0...150.0

1000 s: (144.0...154.0)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 130.0...132.0

1000 s: (127.5...134.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1135...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 245.0...285.0

1000 s: (241.0...289.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275

Rack travel in mm : 7.20...7.40

Del.quantity cm3/ : 14.0...19.0

1000 s: (11.5...21.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 e2  
 Edition : 14.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 552  
 Injection pump  
 Pump designation : PE6P100A820LS503  
 EP type number : 0 411 806 197  
 Governor  
 Governor design. : RQ250/1000PA352-1  
 Governor no. : 0 421 80 412

Customer-spec. information  
 Customer : ENASA

Engine : 95 T1 AZ

1st version kW : 155.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.85...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 13.70...13.80

Del.quantity cm<sup>3</sup>/ : 15.5...15.7

100 s: (15.3...15.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.8...8.0

Del.quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 16.00...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 900

Del.quantity : 155.0...157.0

1000 : (153.0...159.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.6

Testing:

1st rack travel in: 12.70

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1100...1130

4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 700  
Rack travel in m: 14.40...14.80  
3rd speed rpm : 825  
Rack travel in m: 13.90...14.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.10...14.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.90...13.30  
2nd pressure hPa : 400  
Rack travel in m: 14.10...14.20  
3rd pressure hPa : 300  
Rack travel in m: 13.40...13.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 159.0...163.0  
1000 s: (157.0...165.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

#### Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 y9  
 Edition : 29.06.90  
 Replaces : 2.9.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 556  
 Injection pump  
 Pump designation : PE6P120A32ORS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RQ250/1100PA417-10  
 Governor no. : 0 421 80 445

Customer-spec. information  
 Customer : DAF

Engine : DKV 1160

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : (0.50 (0.75))

BASIC SETTING

1st speed rpm : 650  
 Rack travel in mm : 11.10...11.20  
 Del.quantity cm<sup>3</sup>/ : 17.1...17.3  
 100 s: (16.8...17.6)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 250.0  
 Rack travel in mm : 6.7...6.9  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.3)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 550  
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 700  
 Del.quantity : 171.0...173.0  
 1000 : (168.0...176.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 550  
 Rack travel in mm : 15.8  
 Testing:  
 1st rack travel in: 9.10  
 Speed rpm : 1135...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1180...1210  
 4th rack travel in: 1300  
 Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.3

Testing:

Speed rpm : 100

Minimum rack trave: 7.20

Speed rpm : 250

Rack travel in mm : 6.20...6.40

Rack travel in mm : 2.00

Speed rpm : 440...480

TORQUE CONTROL

Dimension a mm : 0.68

Torque control curve - 1st version

1st speed rpm : 1090

Rack travel in m: 10.10...10.20

2nd speed rpm : 650

Rack travel in m: 11.40...11.60

3rd speed rpm : 750

Rack travel in m: 11.00...11.20

4th speed rpm : 825

Rack travel in m: 10.60...10.90

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 290

Rack travel in m: 10.70...10.90

3rd pressure hPa : 260

Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 1090

Del.quantity cm3/ : 159.0...161.0

1000 s: (155.0...165.0)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 129.0...131.0

1000 s: (126.0...134.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10

Speed rpm : 1135...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 320.0...360.0

1000 s: (320.0...360.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.20...6.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 a3  
 Edition : 14.09.90  
 Replaces : 23.3.90  
 Test oil : ISO-4113

Combination no. : 0 401 846 563

Injection pump  
 Pump designation : PE6P120A32ORS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RQV250...1050PA808-3  
 Governor no. : 0 421 813 812

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1 CX

1st version kW : 228.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

---

Rack travel in mm : 10.40...10.50

---

Del.quantity cm<sup>3</sup>/ : 17.9...18.1  
 100 s: (17.6...18.4)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.6...5.8  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 1.90...2.50

3rd speed rpm : 700  
 travel mm : 4.50...5.10

4th speed rpm : 1095  
 travel mm : 8.00...8.20

5th speed rpm : 1185  
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1110  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 900

Del.quantity : 179.0...181.0  
1000 : (176.0...184.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 9.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 78...86

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.20  
Speed rpm : 250  
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION  
Speed rpm : 250...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.40...10.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.60...8.00  
2nd pressure hPa : 650  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 380  
Rack travel in m: 8.40...8.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1030  
Del.quantity cm<sup>3</sup>/ : 191.0...197.0  
1000 s: (188.0...200.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 104.0...106.0  
1000 s: (101.0...109.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 x6  
 Edition : 31.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 564  
 Injection pump  
 Pump designation : PE6P110A32ORS407-1  
 EP type number : 0 411 816 147  
 Governor  
 Governor design. : RQ275/900PA818-2  
 Governor no. : 0 421 80 519

Customer-spec. information  
 Customer : DAF

Engine : LT 156

1st version kW : 156.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600  
 Rack travel in mm : 11.80...11.90  
 Del. quantity cm<sup>3</sup>/ : 13.4...13.6  
 100 s : (13.1...13.8)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

2nd speed rpm : 275.0  
 Rack travel in mm : 7.0...7.2  
 Del. quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s : (1.1...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Del. quantity : 134.0...136.0  
 1000 : (131.5...138.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 15.8

Testing:  
 1st rack travel in: 10.30  
 Speed rpm : 930...945  
 2nd rack travel in: 4.00  
 Speed rpm : 1015...1045  
 4th rack travel in: 1200  
 Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 7.1

Testing:

Speed rpm : 100

Minimum rack trave: 8.30

Speed rpm : 275

Rack travel in mm : 7.00...7.20

Rack travel in mm : 2.50

Speed rpm : 345...385

TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 11.30...11.40

2nd speed rpm : 600

Rack travel in m: 12.40...12.60

3rd speed rpm : 675

Rack travel in m: 12.00...12.20

4th speed rpm : 725

Rack travel in m: 11.60...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 875

Del.quantity cm<sup>3</sup>/ : 118.5...122.5

1000 s: (115.5...125.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 930...945

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 245.0...285.0

1000 s: (241.0...289.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275

Rack travel in mm : 7.00...7.20

Del.quantity cm<sup>3</sup>/ : 14.0...19.0

1000 s: (11.5...21.5)

Spread cm<sup>3</sup> : 4.50

1000 s: (7.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 h  
 Edition : 14.09.90  
 Replaces : 30.3.90  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 565  
 Injection pump  
 Pump designation : PE6P110A820LS513  
 EP type number : 0 411 816 174  
 Governor  
 Governor design. : RQ250/1000PA352-1  
 Govenrer no. : 0 421 80 412

Customer-spec. information  
 Customer : ENASA

Engine : 95 R3AZ,R1AZ

1st version kW : 184.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 600  
 Rack travel in mm : 13.10...13.20  
 Del.quantity cm<sup>3</sup>/ : 17.9...18.1  
 100 s: (17.6...18.4)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.6...6.8  
 Del.quantity cm<sup>3</sup>/ : 1.8...2.3  
 100 s: (1.5...2.5)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 16.00...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 900  
 Del.quantity : 179.0...181.0  
 1000 : (176.0...184.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 16.6

Testing:  
 1st rack travel in: 11.80  
 Speed rpm : 1045...1060  
 2nd rack travel in: 4.00  
 Speed rpm : 1095...1125

4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390

TORQUE CONTROL  
Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 600  
Rack travel in m: 13.30...13.70  
2nd speed rpm : 900  
Rack travel in m: 12.80...13.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.10...13.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...11.20  
2nd pressure hPa : 450  
Rack travel in m: 12.60...12.70  
3rd pressure hPa : 300  
Rack travel in m: 11.60...11.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 175.0...179.0  
1000 s: (173.0...181.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 m  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 566  
 Injection pump  
 Pump designation : PE6P110A32ORS526  
 EP type number : 0 411 816 147  
 Governor  
 Governor design. : RQ275/1000PA818-3  
 Governor no. : 0 421 80 534

Customer-spec. information  
 Customer : DAF

Engine : LT 160 G

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 13.00...14.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
 & maximum rack tra: 13.0...14.0  
 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 600  
 Rack travel in mm : 14.20...14.30  
 Del. quantity cm<sup>3</sup>/ : 15.6...15.8  
 100 s: (15.3...16.0)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.4...7.8  
 Del. quantity cm<sup>3</sup>/ : 2.2...2.7  
 100 s: (1.9...2.9)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 700  
 Del. quantity : 156.0...158.0  
 1000 : (153.5...160.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 15.8  
 Testing:  
 1st rack travel in: 12.40  
 Speed rpm : 1030...1045  
 2nd rack travel in: 4.00

Speed rpm : 1090...1120  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 7.00...7.20  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 13.40...13.60  
2nd speed rpm : 600  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 825  
Rack travel in m: 13.60...13.80

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 14.20...14.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 12.70...12.90  
2nd pressure hPa : 290  
Rack travel in m: 13.90...14.00  
3rd pressure hPa : 260  
Rack travel in m: 13.40...13.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 980  
Del.quantity cm<sup>3</sup>/ : 136.0...138.0  
1000 s: (132.0...142.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 122.0...124.0  
1000 s: (119.5...126.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1030...1045

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 280.0...320.0  
1000 s: (276.0...324.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.40...7.80  
Del.quantity cm<sup>3</sup>/ : 22.0...27.0  
1000 s: (19.5...29.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p 8  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 899  
 Injection pump  
 Pump designation : PE6P110A720RS3225  
 EP type number : 0 411 816 763  
 Governor  
 Governor design. : RQ250/1200PA913-1  
 Governor no. : 0 421 80 536

Customer-spec. information  
 Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 12.50...12.60  
 Del. quantity cm<sup>3</sup>/ : 12.4...12.6  
 100 s: (12.1...12.8)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)  
 2nd speed rpm : 250.0  
 Rack travel in mm : 7.2...7.4  
 Del. quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s: (1.1...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 550  
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del. quantity : 124.0...126.0  
 1000 : (121.5...128.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 550  
 Rack travel in mm : 15.8  
 Testing:  
 1st rack travel in: 11.50  
 Speed rpm : 1235...1250  
 2nd rack travel in: 4.00  
 Speed rpm : 1300...1330  
 4th rack travel in: 1450  
 Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack trave: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 1200  
Rack travel in m: 12.70...12.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 600  
1st pressure hPa : -  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 360  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 270  
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 87.0...89.0  
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.20...5.40

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 p 7  
Edition : 14.09.90  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 899  
  
Injection pump  
Pump designation : PE6P110A72ORS3225  
EP type number : 0 411 816 763  
Governor  
Governor design. : RQ275/1200PA913-1  
Governor no. : 0 421 80 549

Customer-spec. information  
Customer : DAF

Engine : HS 200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test lines : 1 680 750 015  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600  
  
(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
  
Prestroke mm : 3.70...3.80  
                  : (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000  
Rack travel in mm : 12.50...12.60  
Del.quantity cm<sup>3</sup>/ : 12.4...12.6  
100 s: (12.1...12.8)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)  
  
2nd speed rpm : 275.0  
Rack travel in mm : 7.2...7.4  
Del.quantity cm<sup>3</sup>/ : 1.4...1.9  
100 s: (1.1...2.1)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 550  
Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1000  
Del.quantity : 124.0...126.0  
1000 : (121.5...128.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 550  
Rack travel in mm : 15.8

Testing:  
1st rack travel in: 11.50  
Speed rpm : 1235...1250  
2nd rack travel in: 4.00  
Speed rpm : 1320...1350  
4th rack travel in: 1450  
Speed rpm : 0.00...1.40

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack trave: 6.70  
Speed rpm : 275  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 1200  
Rack travel in m: 12.70...12.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 360  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 270  
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 87.0...89.0  
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 275

E02

Rack travel in mm : 5.20...5.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 d  
 Edition : 14.09.90  
 Replaces : 13.10.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 900

Injection pump  
 Pump designation : PE6P120A32ORS3240  
 EP type number : 0 411 826 786  
 Governor  
 Governor design. : RGV250...1025PA921-16  
 Governor no. : 0 421 813 799

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD122FL

1st version kW : 298.0  
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

E03

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

---

Rack travel in mm : 13.60...13.70

---

Del. quantity cm<sup>3</sup>/ : 25.1...25.3  
 100 s: (24.8...25.6)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.5...6.7  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 450  
 travel mm : 3.60...4.20  
 3rd speed rpm : 800  
 travel mm : 6.30...6.70  
 4th speed rpm : 1070  
 travel mm : 8.00...8.20  
 5th speed rpm : 1150  
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1100  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700

Aneroid pressure h: 1200  
Del.quantity : 251.0...253.0  
1000 : (248.0...256.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.10  
Speed rpm : 250  
Rack travel in mm : 6.50...6.70

#### CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.60...13.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 100  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 810  
Rack travel in m: 13.10...13.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 154.0...156.0  
1000 s: (151.0...159.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1065...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...260.0  
1000 s: (216.0...264.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.50...6.70  
Del.quantity cm<sup>3</sup>/ : 17.5...23.5  
1000 s: (15.0...25.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

Start-of-delivery setting with ROBO  
diaphragm.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 d1  
 Edition : 14.09.90  
 Replaces : 13.10.89  
 Test oil : ISO-4113

Combination no. : 0 401 846 901

Injection pump  
 Pump designation : PE6P120A32ORS3240-1  
 EP type number : 0 411 826 787  
 Governor  
 Governor design. : RQV250...950PA921-17  
 Governor no. : 0 421 817 800

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD122FH

1st version kW : 269.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

---

Rack travel in mm : 12.70...12.80

---

Del. quantity cm<sup>3</sup>/ : 22.3...22.5  
 100 s: (22.0...22.8)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.5...6.7  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.2  
 100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 2.20...2.80  
 3rd speed rpm : 750  
 travel mm : 6.30...6.70  
 4th speed rpm : 995  
 travel mm : 8.20...8.40  
 5th speed rpm : 1060  
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1010  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 900

Del.quantity : 223.0...225.0  
1000 : (220.0...228.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 11.70  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.10  
Speed rpm : 250  
Rack travel in mm : 6.50...6.70

#### CONSTANT REGULATION

Speed rpm : 250...380

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.70...12.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 90  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 470  
Rack travel in m: 12.10...12.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 154.0...156.0  
1000 s: (151.0...159.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...260.0  
1000 s: (216.0...264.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.50...6.70  
Del.quantity cm<sup>3</sup>/ : 17.5...22.5  
1000 s: (15.0...25.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

Start-of-delivery setting with ROBO  
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p 5  
 Edition : 17.05.90  
 Replaces : 4.5.90  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 905  
 Injection pump  
 Pump designation : PE6P110A72ORS3225Z  
 EP type number : 0 411 816 762  
 Governor  
 Governor design. : RQ250/1200PA913  
 Governor no. : 0 421 80 477

Customer-spec. information

Customer : DAF  
 Engine : HT 168

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 12.30...12.40  
 Del.quantity cm<sup>3</sup>/ : 12.0...12.2  
 100 s: (11.7...12.4)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)  
 2nd speed rpm : 250.0  
 Rack travel in mm : 7.2...7.4  
 Del.quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s: (1.1...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 550  
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del.quantity : 120.0...122.0  
 1000 : (117.5...124.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 550  
 Rack travel in mm : 15.8  
 Testing:  
 1st rack travel in: 11.30  
 Speed rpm : 1235...1250  
 2nd rack travel in: 4.00  
 Speed rpm : 1320...1350  
 4th rack travel in: 1400  
 Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250  
Rack travel in mm : 5.8

Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 1200  
Rack travel in m: 12.50...12.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 600  
1st pressure hPa : -  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 395  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 320  
Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 83.5...85.5  
1000 s: (81.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 250

E08

Rack travel in mm : 5.70...5.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p10  
 Edition : 20.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 905  
 Injection pump  
 Pump designation : PE6P110A72ORS3225Z  
 EP type number : 0 411 816 762  
 Governor  
 Governor design. : RQ250/1200PA913-1  
 Governor no. : 0 421 80 536

Customer-spec. information  
 Customer : DAF

Engine : HT 168

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 12.30...12.40  
 Del. quantity cm<sup>3</sup>/ : 12.0...12.2  
 100 s: (11.7...12.4)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)  
 2nd speed rpm : 250.0  
 Rack travel in mm : 7.2...7.4  
 Del. quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s: (1.1...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 550  
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del. quantity : 120.0...122.0  
 1000 : (117.5...124.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 550  
 Rack travel in mm : 15.8  
 Testing:  
 1st rack travel in: 11.30  
 Speed rpm : 1235...1250  
 2nd rack travel in: 4.00  
 Speed rpm : 1320...1350  
 4th rack travel in: 1400  
 Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250  
Rack travel in mm : 5.8

Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 250  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 1200  
Rack travel in m: 12.50...12.70

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.80...10.90

2nd pressure hPa : 395

Rack travel in m: 12.00...12.10

3rd pressure hPa : 320

Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 83.5...85.5

1000 s: (81.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 250

E10

Rack travel in mm : 5.70...5.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p 9  
 Edition : 14.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 905  
 Injection pump  
 Pump designation : PE6P110A720RS3225Z  
 EP type number : 0 411 816 762  
 Governor  
 Governor design. : RQ275/1200PA913-1  
 Governor no. : 0 421 80 549

Customer-spec. information  
 Customer : DAF

Engine : HT 168

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 12.30...12.40  
 Del. quantity cm<sup>3</sup>/ : 12.0...12.2  
 100 s: (11.7...12.4)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)  
 2nd speed rpm : 275.0  
 Rack travel in mm : 7.2...7.4  
 Del. quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s: (1.1...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 550  
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del. quantity : 120.0...122.0  
 1000 : (117.5...124.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 550  
 Rack travel in mm : 15.8  
 Testing:  
 1st rack travel in: 11.30  
 Speed rpm : 1235...1250  
 2nd rack travel in: 4.00  
 Speed rpm : 1320...1350  
 4th rack travel in: 1400  
 Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275  
Rack travel in mm : 5.8

Rack travel in mm : 5.70...5.90

Remarks:

Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 275  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 1200  
Rack travel in m: 12.50...12.70

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.80...10.90  
2nd pressure hPa : 395  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 320  
Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 83.5...85.5  
1000 s: (81.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 275



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 u2  
 Edition : 20.07.90  
 Replaces : 6.4.90  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 921  
 Injection pump  
 Pump designation : PE6P110A32ORS3197  
 EP type number : 0 411 816 752  
 Governor  
 Governor design. : RQV250...1100PA589  
 Governor no. : 0 421 817 307

Customer-spec. information  
 Customer : VME

Engine : TD102 KF

1st version kW : 200.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 16.2...16.4

100 s: (15.9...16.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.5...4.9

Del.quantity cm<sup>3</sup>/ : 2.5...2.9

100 s: (2.2...3.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 2.20...2.70

3rd speed rpm : 450  
 travel mm : 3.70...4.10

4th speed rpm : 750  
 travel mm : 6.30...6.70

5th speed rpm : 1160  
 travel mm : 7.90...8.10

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1180  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1000  
 Del.quantity : 162.0...164.0  
 1000 : (159.0...167.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 250  
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION  
Speed rpm : 250...380

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.70...11.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.20  
2nd pressure hPa : 390  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 180  
Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 146.0...150.0  
1000 s: (143.0...153.0)  
Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 127.0...129.0  
1000 s: (124.0...132.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.30...4.50

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 e1  
 Edition : 14.09.90  
 Replaces : 23.3.90  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 922  
 Injection pump  
 Pump designation : PE6P120A32ORS3176-3  
 EP type number : 0 411 826 793  
 Governor  
 Governor design. : RQV250...1050PA808  
 Governor no. : 0 421 813 553

Customer-spec. information  
 Customer : ENASA

Engine : 96 R1 CX

1st version kW : 221.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.80...12.90

Del.quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 7.2...7.6  
 Del.quantity cm<sup>3</sup>/ : 2.5...3.1  
 100 s: (2.2...3.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 1.90...2.50  
 3rd speed rpm : 700  
 travel mm : 4.50...5.10  
 4th speed rpm : 1095  
 travel mm : 8.00...8.20  
 5th speed rpm : 1185  
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1110  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 900

Del.quantity : 196.0...198.0  
1000 : (193.0...201.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 79...87

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 250...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.80...12.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.20  
2nd pressure hPa : 500  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 190  
Rack travel in m: 10.40...10.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1030  
Del.quantity cm<sup>3</sup>/ : 208.0...214.0  
1000 s: (205.0...217.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 123.0...125.0  
1000 s: (120.0...128.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 115.0...135.0  
1000 s: (111.0...139.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 i  
 Edition : 29.06.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 923  
 Injection pump  
 Pump designation : PE6P120A320RS3118  
 EP type number : 0 411 826 726  
 Governor  
 Governor design. : RQV250...1100PA920-6  
 Governor no. : 0 421 817 872

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : THD 102 KD

1st version kW : 250.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 22.2...22.4

100 s: (21.9...22.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.3...4.5

Del.quantity cm<sup>3</sup>/ : 2.7...3.3

100 s: (2.4...3.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 500

travel mm : 4.10...4.70

3rd speed rpm : 800

travel mm : 6.30...6.70

4th speed rpm : 1140

travel mm : 7.70...7.90

5th speed rpm : 1230

travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 222.0...224.0  
1000 : (219.0...227.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 113...121

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 250  
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION  
Speed rpm : 250...370

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.70...12.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.50  
2nd pressure hPa : 700  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 120  
Rack travel in m: 9.00...9.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 131.0...133.0  
1000 s: (128.0...136.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 230.0...270.0  
1000 s: (225.0...275.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.30...4.50  
Del.quantity cm3/ : 27.0...33.0  
1000 s: (24.0...36.0)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 q  
 Edition : 10.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 927  
 Injection pump  
 Pump designation : PE6P110A72ORS3258  
 EP type number : 0 411 816 771  
 Governor  
 Governor design. : RQ325/1200PA913-2  
 Governor no. : 0 421 80 539

Customer-spec. information  
 Customer : DAF

Engine : HT 168 G

## TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 0 681 343 009  
 Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 12.50...13.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.80...8.00  
 & maximum rack tra: 12.5...13.5  
 Difference ° CS : 1.50...3.00

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 12.90...13.00  
 Del.quantity cm<sup>3</sup>/ : 12.3...12.5  
 100 s: (12.1...12.8)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 325.0  
 Rack travel in mm : 7.3...7.7  
 Del.quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s: (1.1...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 550  
 Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del.quantity : 123.5...125.5  
 1000 : (121.0...128.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

## RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 550  
 Rack travel in mm : 15.8  
 Testing:  
 1st rack travel in: 11.90  
 Speed rpm : 1235...1250  
 2nd rack travel in: 4.00

Speed rpm : 1325...1355  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 6.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 275  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.20...13.30  
2nd speed rpm : 1200  
Rack travel in m: 13.10...13.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.90...13.00

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 370  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 240  
Rack travel in m: 11.40...11.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 81.5...83.5  
1000 s: (79.0...86.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1235...1250

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.20...6.40

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 r  
 Edition : 21.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 928  
 Injection pump  
 Pump designation : PE6P110A72ORS3258  
 EP type number : 0 411 816 771  
 Governor  
 Governor design. : RQV325...1200PA910-1  
 Governor no. : 0 421 817 880

Customer-spec. information  
 Customer : DAF

Engine : HT 168 G

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 12.50...13.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.80...8.00  
 & maximum rack tra: 12.5...13.5  
 Difference ° CS : 1.50...3.00

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 13.30...13.40  
 Del.quantity cm<sup>3</sup>/ : 12.3...12.5  
 100 s: (12.1...12.8)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 325.0  
 Rack travel in mm : 7.7...8.1  
 Del.quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s: (1.1...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1245  
 travel mm : 8.10...8.30  
 2nd speed rpm : 325  
 travel mm : 0.90...1.30  
 3rd speed rpm : 500  
 travel mm : 2.90...3.50  
 4th speed rpm : 800  
 travel mm : 4.60...5.00  
 5th speed rpm : 1500  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1240  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del.quantity : 123.5...125.5  
 1000 : (121.0...128.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

#### Testing:

1st rack travel in: 12.30  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 79...87

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.90  
Speed rpm : 325  
Rack travel in mm : 6.30...6.50

#### CONSTANT REGULATION

Speed rpm : 340...460

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.30...13.40

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.50...11.70  
2nd pressure hPa : 370  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 240  
Rack travel in m: 11.80...12.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 81.5...83.5  
1000 s: (79.0...86.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.30  
Speed rpm : 1240...1250

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.30...6.50

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,2 c  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 929  
 Injection pump  
 Pump designation : PE6P110A720RS3257  
 EP type number : 0 411 816 772  
 Governor  
 Governor design. : RQ325/1200PA913-2  
 Governor no. : 0 421 80 539

Customer-spec. information  
 Customer : DAF

Engine : HS 200 G

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 13.50...14.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.40...7.60  
 & maximum rack tra: 13.5...14.5  
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 14.00...14.10  
 Del.quantity cm<sup>3</sup>/ : 13.8...14.0  
 100 s: (13.5...14.2)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 325.0  
 Rack travel in mm : 7.7...8.1  
 Del.quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s: (1.1...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 550  
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del.quantity : 138.0...140.0  
 1000 : (135.5...142.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 550  
 Rack travel in mm : 15.8  
 Testing:  
 1st rack travel in: 13.00  
 Speed rpm : 1235...1250  
 2nd rack travel in: 4.00

Speed rpm : 1325...1355  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

Remarks: :

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.4

Testing:

Speed rpm : 100  
Minimum rack trave: 7.90  
Speed rpm : 325  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 395...435

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.80...11.00  
2nd pressure hPa : 390  
Rack travel in m: 13.30...13.40  
3rd pressure hPa : 180  
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 80.5...82.5  
1000 s: (78.0...85.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.30...6.50

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,2 d  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 930  
 Injection pump  
 Pump designation : PE6P110A72ORS3257  
 EP type number : 0 411 816 772  
 Governor  
 Governor design. : RQV325...1200PA910-1  
 Governor no. : 0 421 817 880

Customer-spec. information  
 Customer : DAF

Engine : HS 200 G

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 13.50...14.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.40...7.60  
 & maximum rack tra: 13.5...14.5  
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 14.00...14.10  
 Del.quantity cm<sup>3</sup>/ : 13.8...14.0  
 100 s: (13.5...14.2)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 325.0  
 Rack travel in mm : 7.7...8.1  
 Del.quantity cm<sup>3</sup>/ : 1.4...1.9  
 100 s: (1.1...2.1)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1245  
 travel mm : 8.10...8.30  
 2nd speed rpm : 325  
 travel mm : 0.90...1.30  
 3rd speed rpm : 500  
 travel mm : 2.90...3.50  
 4th speed rpm : 800  
 travel mm : 4.60...5.00  
 5th speed rpm : 1500  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1240  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1000  
 Del.quantity : 138.0...140.0  
 1000 : (135.5...142.5)

Spread cm3 : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 13.00  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 78...86

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.90  
Speed rpm : 325  
Rack travel in mm : 6.30...6.50

CONSTANT REGULATION  
Speed rpm : 340...460

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.00...14.10

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.80...11.00  
2nd pressure hPa : 390  
Rack travel in m: 13.30...13.40  
3rd pressure hPa : 180  
Rack travel in m: 11.80...12.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm3/ : 80.5...82.5  
1000 s: (78.0...85.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1240...1250

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.30...6.50

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 h2  
 Edition : 03.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 931  
 Injection pump  
 Pump designation : PE6P120A32ORS3248  
 EP type number : 0 411 826 792  
 Governor  
 Governor design. : RQV250...1000PA851-5  
 Governor no. : 0 421 813 877

Customer-spec. information  
 Customer : DAF

Engine : WS 222

1st version kW : 222.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.80...11.90

Del.quantity cm<sup>3</sup>/ : 18.9...19.1

100 s : (18.6...19.4)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.5...6.7

Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s : (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
 travel mm : 7.80...8.00

2nd speed rpm : 250  
 travel mm : 0.70...1.10

3rd speed rpm : 400  
 travel mm : 2.50...3.10

4th speed rpm : 750  
 travel mm : 4.80...5.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1075

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 189.0...191.0

1000 : (186.0...194.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 10.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1120...1150  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 79...87

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 260...380

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 230  
Rack travel in m: 11.40...11.50

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 164.0...166.0  
1000 s: (161.0...169.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:  
:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,2 b 1  
 Edition : 31.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 932  
 Injection pump  
 Pump designation : PE6P120A32ORS3183-3  
 EP type number : 0 411 826 794  
 Governor  
 Governor design. : RQ275/1100PA832-4  
 Governor no. : 0 421 80 537

Customer-spec. information  
 Customer : DAF

Engine : ks 260 S

1st version kW : 260.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 21.0...21.2

100 s: (20.7...21.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.6...7.0

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 210.0...212.0

1000 : (207.0...215.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.70

Speed rpm : 1125...1140

2nd rack travel in: 4.00

Speed rpm : 1215...1245  
4th rack travel in: 1350  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 6.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.30  
Speed rpm : 275  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 395...435

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 1100  
Rack travel in m: 12.90...13.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.70...12.80

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 500  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 340  
Rack travel in m: 11.00...11.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 148.0...150.0  
1000 s: (145.0...153.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

F02

full load rack tr: 11.70  
Speed rpm : 1125...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...300.0  
1000 s: (256.0...304.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 6.60...7.00  
Del.quantity cm3/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAE 12,0 a  
 Edition : 16.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 933  
 Injection pump  
 Pump designation : PE6P110A320RS3260  
 EP type number : 0 411 816 775  
 Governor  
 Governor design. : RQ250/1050PA969  
 Governor no. : 0 421 80 538

Customer-spec. information  
 Customer : HAEP

Engine : X6130 NA

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 12.10...12.20  
 Del. quantity cm<sup>3</sup>/ : 13.5...13.8  
 100 s: (13.2...14.0)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 250.0  
 Rack travel in mm : 8.5...8.9  
 Del. quantity cm<sup>3</sup>/ : 2.7...3.2  
 100 s: (2.4...3.4)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 550  
 Rack travel in mm : 14.60...16.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del. quantity : 135.0...138.0  
 1000 : (132.5...140.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 550  
 Rack travel in mm : 15.4

Testing:  
 1st rack travel in: 11.10  
 Speed rpm : 1095...1110  
 2nd rack travel in: 4.00  
 Speed rpm : 1130...1160  
 4th rack travel in: 1250

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250  
Rack travel in mm : 8.7

Testing:

Speed rpm : 100  
Minimum rack trave: 10.20  
Speed rpm : 250  
Rack travel in mm : 8.60...8.80

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 600  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 760  
Rack travel in m: 12.70...12.90  
4th speed rpm : 870  
Rack travel in m: 12.20...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 138.0...142.0  
1000 s: (135.0...145.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...190.0  
1000 s: (166.0...194.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 k  
 Edition : 21.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 934  
 Injection pump  
 Pump designation : PE6P120A32ORS3176-4  
 EP type number : 0 411 826 795  
 Governor  
 Governor design. : RQ250/1000PA218-3  
 Governor no. : 0 421 80' 541

Customer-spec. information  
 Customer : ENASA

Engine : 96 T4 EZ

1st version kW : 176.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 10.10...10.20  
 Del.quantity cm3/ : 17.4...17.6  
 100 s: (17.1...17.9)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm3/ : 2.5...2.1  
 100 s: (2.2...3.4)  
 Spread cm3 : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 700  
 Del.quantity : 174.0...176.0  
 1000 : (171.0...179.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 16.0

Testing:  
 1st rack travel in: 9.10

Speed rpm : 1045...1060  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.10...10.20

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.40...8.80  
2nd pressure hPa : 170  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 120  
Rack travel in m: 9.00...9.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 117.0...119.0  
1000 s: (114.0...122.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 s18  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 936  
 Injection pump  
 Pump designation : PE6P110A320LS3835-1  
 EP type number : 0 411 816 755  
 Governor  
 Governor design. : RQ300/900PA187-14  
 Governor no. : 0 421 80" 357

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 150.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.50...12.60

Del.quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.20...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 126.0...128.0

1000 : (123.5...130.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.6

Testing:

1st rack travel in: 11.50

Speed rpm : 940...950

2nd rack travel in: 4.00  
Speed rpm : 985...1015  
4th rack travel in: 1100  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.30  
Speed rpm : 300  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 430...470

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 124.0...128.0  
1000 s: (121.0...131.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:  
:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 i 1  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 077  
 Injection pump  
 Pump designation : PE8P100A320LS845  
 EP type number : 0 411 808 055  
 Governor  
 Governor design. : RQ300/1250PA187R  
 Governor no. : 0 421 80" 034

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 402

1st version kW : 188.3  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.40...3.50  
 : (3.35...3.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1250  
 Rack travel in mm : 10.00...10.10  
 Del. quantity cm<sup>3</sup>/ : 10.2...10.4  
 100 s: (10.0...10.6)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.9...7.3  
 Del. quantity cm<sup>3</sup>/ : 1.3...1.9  
 100 s: (1.0...2.1)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 13.30...14.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del. quantity : 102.0...104.0  
 1000 : (100.0...106.0)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (6.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 13.9

Testing:  
 1st rack travel in: 9.00

Speed rpm : 1295...1310  
2nd rack travel in: 4.00  
Speed rpm : 1335...1365  
4th rack travel in: 1400  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.1

Testing:

Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.90...7.30  
Rack travel in mm : 2.00  
Speed rpm : 415...455

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 600  
Rack travel in m: 10.00...10.20

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.00  
Speed rpm : 1295...1310

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...140.0  
1000 s: (116.0...144.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 c 2  
 Edition : 06.07.90  
 Replaces : 7.10.88  
 Test oil : ISO-4113

Combination no. : 0 401 848 712

Injection pump  
 Pump designation : PE8P110A320LS3802-10  
 EP type number : 0 411 818 710  
 Governor  
 Governor design. : RQV300...1150PA524-2  
 Governor no. : 0 421 813 264

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM422

1st version kW : 206.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...0

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

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Rack travel in mm : 11.70...11.80

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Del. quantity cm<sup>3</sup>/ : 11.4...11.6  
 100 s: (11.1...11.8)

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Spread cm<sup>3</sup> : 0.4

2nd speed rpm : 300.0  
 Rack travel in mm : 7.9...8.1  
 Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s: (1.2...2.3)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.60...2.00  
 2nd speed rpm : 800  
 travel mm : 5.80...6.30  
 3rd speed rpm : 1200  
 travel mm : 8.00...8.60  
 4th speed rpm : 1250  
 travel mm : 9.00...9.80

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1190  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Del. quantity : 114.0...116.0  
 1000 : (111.5...118.5)  
 Spread cm<sup>3</sup> : 4.00

RATED SPEED

1st version  
Control lever  
position degrees: 51...59

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270

LOW IDLE 1  
Control lever  
position degrees: 18...26

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.60  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10  
Rack travel in mm : 2.00  
Speed rpm : 430...490

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 132.0...137.0  
1000 s: (129.0...140.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 d 6  
 Edition : 11.11.89  
 Replaces : 29.3.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 795  
 Injection pump  
 Pump designation : PE8P110A32OLS3842  
 EP type number : 0 411 818 714  
 Governor  
 Governor design. : RQV300..1050PA884-1  
 Governor no. : 0 421 813 686

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750  
 Rack travel in mm : 12.70...12.80  
 Del. quantity cm<sup>3</sup>/ : 12.6...12.8  
 100 s: (12.3...13.0)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 300.0  
 Rack travel in mm : 8.4...8.8  
 Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s: (1.2...2.3)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.40  
 2nd speed rpm : 800  
 travel mm : 5.80...6.20  
 3rd speed rpm : 1100  
 travel mm : 8.20...8.60  
 4th speed rpm : 1150  
 travel mm : 9.10...9.70

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1130  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Del. quantity : 126.0...128.0  
 1000 : (123.5...130.5)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

Remarks:

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 18...26

#### Testing:

Speed rpm : 200  
Minimum rack trave: 10.00  
Speed rpm : 300  
Rack travel in mm : 6.80...7.00

#### CONSTANT REGULATION

Speed rpm : 300...400

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 136.0...140.0  
1000 s: (133.0...143.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB 14,7 r  
 Edition : 20.07.90  
 Replaces : 12.4.90  
 Test oil : ISO-4113  
  
 Combination no. : 0 401 848 808  
  
 Injection pump  
 Pump designation : PE8P110A32OLS3846-1  
 EP type number : 0 411 818 719  
 Governor  
 Governor design. : RQV300...1050PA884-5  
 Governor no. : 0 421 813 831

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

### BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del. quantity cm<sup>3</sup>/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

(B) Setting of injection pump  
with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.00...1.50

2nd speed rpm : 440  
travel mm : 2.70...3.20

3rd speed rpm : 730  
travel mm : 4.70...5.20

4th speed rpm : 1110  
travel mm : 8.00...8.50

5th speed rpm : 1360  
travel mm : 11.00...12.00

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 122.0...124.0  
1000 : (119.5...126.5)  
Spread cm<sup>3</sup> : 8.50  
1000 : (13.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 85...93

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.20  
Speed rpm : 300  
Rack travel in mm : 6.30...6.90

CONSTANT REGULATION  
Speed rpm : 300...500

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 117.0...123.0  
1000 s: (114.5...125.5)  
Spread cm<sup>3</sup> : 11.00  
1000 s: (14.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks: :



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 d 9
Edition : 19.06.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 848 809
Injection pump
Pump designation : PE8P110A320LS3842-1
EP type number : 0 411 818 716
Governor
Governor design. : RQV350...1050PA378-7
Governor no. : 0 421 813 714

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 12.70...12.80
Del.quantity cm3/ : 13.7...13.9
100 s: (13.4...14.1)
Spread cm3 : 0.4
100 s: (0.7)

2nd speed rpm : 350.0
Rack travel in mm : 8.0...8.3
Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.3)
Spread cm3 : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.50...1.70
2nd speed rpm : 800
travel mm : 4.90...5.30
3rd speed rpm : 1100
travel mm : 7.90...8.50
4th speed rpm : 1150
travel mm : 8.90...9.70

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1110
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del.quantity : 137.0...139.0
1000 : (134.5...141.5)

Spread cm3 : 4.00  
1000 : (7.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 71...79

Testing:  
Speed rpm : 250  
Minimum rack trave: 9.50  
Speed rpm : 350  
Rack travel in mm : 8.00...8.30

CONSTANT REGULATION  
Speed rpm : 350...450

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm3/ : 123.0...127.0  
1000 s: (120.0...130.0)  
Spread cm3 : 5.00  
1000 s: (8.00)  
Speed rpm : 1050  
Del.quantity cm3/ : 87.0...89.0 \*  
1000 s: (84.0...92.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

\* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 r 1  
 Edition : 19.06.90  
 Replaces : 12.4.90  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 810  
 Injection pump  
 Pump designation : PE8P110A320LS3846-1  
 EP type number : 0 411 818 719  
 Governor  
 Governor design. : RQV300...1050PA884-7  
 Governor no. : 0 421 813 859

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 195.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 11.1...11.3

100 s: (10.8...11.5)

Spread cm3 : 0.8

100 s: (1.3)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.2...7.8  
 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.6  
 100 s: (1.1)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.40

2nd speed rpm : 480  
 travel mm : 3.10...3.60

3rd speed rpm : 770  
 travel mm : 5.60...6.10

4th speed rpm : 1100  
 travel mm : 8.70...9.20

5th speed rpm : 1310  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 111.0...113.0  
1000 : (108.5...115.5)  
Spread cm<sup>3</sup> : 8.50  
1000 : (13.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 85...93

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.90  
Speed rpm : 300  
Rack travel in mm : 7.00...7.60

CONSTANT REGULATION  
Speed rpm : 300...500

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 106.0...112.0  
1000 s: (103.5...114.5)  
Spread cm<sup>3</sup> : 11.00  
1000 s: (14.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 9,7 b  
 Edition : 10.08.90  
 Replaces : 12.9.86  
 Test oil : ISO-4113  
 Combination no. : 0 401 856 701  
 Injection pump  
 Pump designation : PE6P110A721RS3101  
 EP type number : 0 411 816 725  
 Governor  
 Governor design. : RQV250...1200PA413  
 Governor no. : 0 421 813 333

Customer-spec. information  
 Customer : STEYR

Engine : WD615.67

1st version kW : 206.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 16.2...16.4

100 s: (15.9...16.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1290

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 162.0...164.0

1000 : (159.0...167.0)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.00

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1335...1365

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 360...420

TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 500  
Rack travel in m: 12.50...12.60  
3rd speed rpm : 880  
Rack travel in m: 12.20...12.30  
4th speed rpm : 1060  
Rack travel in m: 12.00...12.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...9.90  
2nd pressure hPa : 420  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 330  
Rack travel in m: 10.20...10.40

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 165.0...169.0  
1000 s: (163.0...171.0)  
Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 120.0...125.0  
1000 s: (117.0...125.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...270.0  
1000 s: (236.0...274.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 07  
 Edition : 03.08.90  
 Replaces : 4.5.90  
 Test oil : ISO-4113

Combination no. : 0 401 876 295

Injection pump  
 Pump designation : PE6P120A320RS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1000P5A508-1  
 Governor no. : 0 421 833 194

Customer-spec. information  
 Customer : DAF

Engine : DKZ 1160

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

---

Rack travel in mm : 12.50...12.60

---

Del.quantity cm<sup>3</sup>/ : 20.6...20.8  
 100 s : (20.3...21.1)

---

Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.7...6.9  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s : (1.1...2.3)

Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 700  
 Del.quantity : 206.0...208.0  
 1000 : (203.0...211.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 45...53

Testing:  
 1st rack travel in: 11.50  
 Speed rpm : 1035...1045  
 2nd rack travel in: 4.00  
 Speed rpm : 1115...1145

3rd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0  
Speed rpm : 250  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 630...690

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 400  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 300  
Rack travel in m: 13.00...13.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.50...12.60

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.20...10.50  
2nd pressure hPa : 340  
Rack travel in m: 11.80...11.90  
3rd pressure hPa : 260  
Rack travel in m: 10.60...11.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 140.0...142.0  
1000 s: (137.0...145.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1035...1045

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 305.0...345.0  
1000 s: (301.0...349.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.40...6.60

Remarks:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 w1  
 Edition : 08.06.90  
 Replaces : 9.3.87  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 303  
 Injection pump  
 Pump designation : PE6P100A32ORS384-1  
 EP type number : 0 411 806 189  
 Governor  
 Governor design. : RSV250...1100P5A510  
 Governor no. : 0 421 837 191

Customer-spec. information  
 Customer : DAF

Engine : DK 1160V

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600  
 Rack travel in mm : 11.50...11.60  
 Del. quantity cm<sup>3</sup>/ : 11.0...11.2  
 100 s : (10.8...11.4)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)  
 2nd speed rpm : 250.0  
 Rack travel in mm : 7.2...7.4  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.6  
 100 s : (0.9...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Del. quantity : 110.5...112.5  
 1000 : (108.5...114.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 46...54

Testing:  
 1st rack travel in: 9.80  
 Speed rpm : 1125...1135  
 2nd rack travel in: 4.00  
 Speed rpm : 1175...1205  
 3rd rack travel in: 4.00  
 Speed rpm : 1260...1290  
 4th rack travel in: 1400  
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.8  
Speed rpm : 250  
Rack travel in mm : 7.20...7.40  
Rack travel in mm : 2.00  
Speed rpm : 700...760

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 600  
Rack travel in m: 11.50...11.60  
3rd speed rpm : 825  
Rack travel in m: 11.20...11.40  
4th speed rpm : 900  
Rack travel in m: 11.10...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050  
Del.quantity cm3/ : 108.0...110.0  
1000 s: (104.5...113.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1125...1135

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 195.0...235.0  
1000 s: (191.0...239.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.20...7.40  
Del.quantity cm3/ : 12.0...16.0  
1000 s: (9.5...18.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6k19  
 Edition : 03.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 311X  
 Injection pump  
 Pump designation : PE6P120A32ORS372-1Y  
 EP type number : 0 411 826 125  
 Governor  
 Governor design. : RSV250...1100P5A508-  
 2  
 Govenrer no. : 0 421 833 195

Customer-spec. information  
 Customer : DAF

Engine : DKX 1160

1st version kW : 242.7  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

F27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850  
 Rack travel in mm : 11.40...11.50  
 Del.quantity cm3/ : 18.3...18.5  
 100 s: (18.0...18.8)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.4...6.6  
 Del.quantity cm3/ : 1.1...1.5  
 100 s: (0.8...1.8)  
 Spread cm3 : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 700  
 Del.quantity : 183.5...185.5  
 1000 : (180.5...188.5)  
 Spread cm3 : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 50...58

Testing:  
 1st rack travel in: 10.40

Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
3rd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1425  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0  
Speed rpm : 250  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 640...700

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 400  
Rack travel in m: 11.60...11.80  
3rd speed rpm : 300  
Rack travel in m: 11.80...12.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.40...11.50

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.00...10.10  
2nd pressure hPa : 370  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 300  
Rack travel in m: 10.50...10.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 135.5...137.5  
1000 s: (132.5...140.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 315.0...355.0  
1000 s: (311.0...359.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.40...6.60  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.0...18.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 g  
 Edition : 14.09.90  
 Replaces : 9.11.89  
 Test oil : ISO-4113

Combination no. : 0 401 876 333

Injection pump  
 Pump designation : PE6P120A32ORS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RSV250...1100POA533  
 Governor no. : 0 421 833 274

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1A0

1st version kW : 213.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

---

Rack travel in mm : 10.30...10.40

---

Del.quantity cm<sup>3</sup>/ : 18.7...18.9  
 100 s: (18.4...19.2)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del.quantity : 187.0...189.0  
 1000 : (184.0...192.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 85...93

Testing:  
 1st rack travel in: 9.30

Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1110...1140  
3rd rack travel in: 4.00  
Speed rpm : 1115...1145  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 60...68  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 450  
Rack travel in m: 10.30...10.50  
3rd speed rpm : 300  
Rack travel in m: 11.50...12.20

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:  
:

#### APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 f  
 Edition : 08.06.90  
 Replaces : 30.3.90  
 Test oil : ISO-4113

Combination no. : 0 401 876 335

Injection pump  
 Pump designation : PE6P120A32ORS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1100P5A508-8  
 Governor no. : 0 421 833 298

Customer-spec. information  
 Customer : DAF

Engine : DKV 1160

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 17.1...17.3  
 100 s: (16.8...17.6)

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.7...6.9  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 700  
 Del.quantity : 171.0...173.0  
 1000 : (168.0...176.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 95...103

Testing:  
 1st rack travel in: 9.10  
 Speed rpm : 1135...1145  
 2nd rack travel in: 4.00  
 Speed rpm : 1175...1205

3rd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1375  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 66...74  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.8  
Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 630...730

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1090  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 650  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 800  
Rack travel in m: 10.80...11.00  
4th speed rpm : 850  
Rack travel in m: 10.40...10.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 290  
Rack travel in m: 10.70...10.90  
3rd pressure hPa : 260  
Rack travel in m: 10.20...10.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1090  
Del.quantity cm3/ : 159.0...161.0  
1000 s: (155.0...165.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 129.0...131.0  
1000 s: (126.0...134.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1135...1145

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 310.0...350.0  
1000 s: (306.0...354.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.20...6.40

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 g  
 Edition : 08.06.90  
 Replaces : 16.2.90  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 336  
 Injection pump  
 Pump designation : PE6P120A32ORS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1050P5A539  
 Governor no. : 0 421 833 299

Customer-spec. information  
 Customer : DAF

Engine : KT 191

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650  
 Rack travel in mm : 10.80...10.90  
 Del.quantity cm<sup>3</sup>/ : 16.1...16.3  
 100 s : (15.8...16.6)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.4...6.8  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s : (1.1...2.3)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 700  
 Del.quantity : 161.0...163.0  
 1000 : (158.0...166.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 96...104

Testing:  
 1st rack travel in: 9.20  
 Speed rpm : 1085...1095  
 2nd rack travel in: 4.00  
 Speed rpm : 1125...1155  
 3rd rack travel in: 4.00

Speed rpm : 1150...1180  
4th rack travel in: 1320  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.8  
Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 630...730

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1040  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 650  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 805  
Rack travel in m: 10.80...11.00  
4th speed rpm : 850  
Rack travel in m: 10.50...10.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 10.80...10.90

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 310  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 250  
Rack travel in m: 9.80...10.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1040  
Del.quantity cm3/ : 161.0...163.0  
1000 s: (157.0...167.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 130.0...132.0  
1000 s: (127.0...135.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1085...1095

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 300.0...340.0  
1000 s: (296.0...344.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.20...6.40

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 f1  
 Edition : 08.06.90  
 Replaces : 16.2.90  
 Test oil : ISO-4113

Combination no. : 0 401 876 338

Injection pump  
 Pump designation : PE6P120A32ORS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1100P5A508-9

Governer no. : 0 421 833 321

Customer-spec. information  
 Customer : DAF

Engine : KS 238

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 700

Del.quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 99...107

Testing:

1st rack travel in: 10.00

Speed rpm : 1130...1140

2nd rack travel in: 4.00

Speed rpm : 1185...1215

3rd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0  
Speed rpm : 250  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 600...700

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1090  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 650  
Rack travel in m: 12.20...12.30  
3rd speed rpm : 760  
Rack travel in m: 11.60...11.80  
4th speed rpm : 810  
Rack travel in m: 11.20...11.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.90...12.00

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 300  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 230  
Rack travel in m: 10.40...10.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1090  
Del.quantity cm<sup>3</sup>/ : 181.0...183.0  
1000 s: (177.0...187.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 131.0...133.0  
1000 s: (128.0...136.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 305.0...345.0  
1000 s: (301.0...349.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.40...6.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 f2  
Edition : 21.09.90  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 876 341

Injection pump  
Pump designation : PE6P120A32ORS415-1  
EP type number : 0 411 826 123  
Governor  
Governor design. : RSV250...1100P5A508-10  
Governor no. : 0 421 833 342

Customer-spec. information  
Customer : DAF

Engine : KS 238 G

TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 19.1...19.3  
100 s: (18.8...19.6)

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 7.2...7.6  
Del.quantity cm3/ : 3.6...4.2  
100 s: (3.3...4.5)

Spread cm3 : 0.8  
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 650  
Aneroid pressure h: 700  
Del.quantity : 191.0...193.0  
1000 : (188.0...196.0)

Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 99...107

Testing:  
1st rack travel in: 10.20  
Speed rpm : 1125...1135  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200

3rd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1500  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 69...77  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 7.0  
Speed rpm : 250  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 640...740

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1090  
Rack travel in m: 11.20...11.40  
2nd speed rpm : 650  
Rack travel in m: 12.30...12.40  
3rd speed rpm : 690  
Rack travel in m: 12.10...12.20  
4th speed rpm : 760  
Rack travel in m: 11.50...11.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.10...12.20

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.60...9.90  
2nd pressure hPa : 340  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 210  
Rack travel in m: 10.30...10.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1090  
Del.quantity cm<sup>3</sup>/ : 185.0...187.0  
1000 s: (181.0...191.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 128.5...130.5  
1000 s: (125.5...133.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1125...1135

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 295.0...335.0  
1000 s: (291.0...339.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.20...7.60  
Del.quantity cm<sup>3</sup>/ : 36.0...42.0  
1000 s: (33.0...45.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 i  
 Edition : 14.09.90  
 Replaces : 13.12.89  
 Test oil : ISO-4113

Combination no. : 0 401 876 760

Injection pump  
 Pump designation : PE6P120A32ORS3176-1  
 EP type number : 0 411 826 767  
 Governor  
 Governor design. : RSV250...1100POA533.  
 Governor no. : 0 421 833 274

Customer-spec. information  
 Customer : ENASA

Engine : 96 W1 A0

1st version kW : 250.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 24.6...24.8

100 s: (24.3...25.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 2.5...3.1  
 100 s: (2.2...3.4)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 246.0...248.0

1000 : (243.0...251.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 91...99

Testing:

1st rack travel in: 12.60

Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
3rd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 65...73  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.60...13.70  
2nd speed rpm : 450  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 300  
Rack travel in m: 14.80...15.40

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 12,9 b  
 Edition : 14.09.90  
 Replaces : 1.12.89  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 771  
 Injection pump  
 Pump designation : PE6P120A32ORS3244  
 EP type number : 0 411 826 788  
 Governor  
 Governor design. : RSV250...1000POA545  
 Governor no. : 0 421 833 329

Customer-spec. information  
 Customer : ENASA

Engine : 98 W1A0.MR4

1st version kw : 309.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40  
 : (3.25...3.45)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 26.0...26.2

100 s: (25.7...26.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 3.6...3.8  
 Del.quantity cm3/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm3 : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 1500  
 Del.quantity : 260.0...262.0  
 1000 : (257.0...265.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 84...92

Testing:

1st rack travel in: 11.60  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
3rd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 61...69  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 3.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 3.60...3.80  
Rack travel in mm : 2.00  
Speed rpm : 270...330

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.80...13.00  
2nd speed rpm : 450  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 300  
Rack travel in m: 14.10...14.70

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.90  
2nd pressure hPa : 970  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 510  
Rack travel in m: 9.50...9.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 141.5...143.5  
1000 s : (138.5...146.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s : (146.0...174.0)  
Rack travel in mm : 19.50...21.00

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

#### APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 j  
 Edition : 14.09.90  
 Replaces : 9.11.89  
 Test oil : ISO-4113

Combination no. : 0 401 876 772

Injection pump  
 Pump designation : PE6P120A32ORS3200  
 EP type number : 0 411 826 766  
 Governor  
 Governor design. : RSV250...1000POA545-  
 1

Governer no. : 0 421 833 330

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1E0.MR4

1st version kW : 250.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del.quantity cm<sup>3</sup>/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.3...3.7

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 81...89

Testing:

1st rack travel in: 10.60  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
3rd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 59...67  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.80...12.00  
2nd speed rpm : 450  
Rack travel in m: 11.90...12.10  
3rd speed rpm : 300  
Rack travel in m: 13.00...13.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.20...8.60  
2nd pressure hPa : 790  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 540  
Rack travel in m: 9.30...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 133.5...135.5  
1000 s: (130.5...138.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...180.0  
1000 s: (146.0...184.0)  
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 z  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 775  
 Injection pump  
 Pump designation : PE6P110A320LS3835-3  
 EP type number : 0 411 816 773  
 Governor  
 Governor design. : RSV350...1050POA531-  
 2  
 Governor no. : 0 421 833 343

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 441

1st version kW : 160.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 14.30...14.40

Del.quantity cm<sup>3</sup>/ : 13.8...14.0

100 s: (13.5...14.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 9.2...9.6

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del.quantity : 138.0...140.0

1000 : (135.5...142.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 88...96

Testing:

1st rack travel in: 13.40  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control Lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 9.4

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 9.20...9.60  
Rack travel in mm : 2.00  
Speed rpm : 380...440

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm3/ : 126.0...130.0  
1000 s: (123.0...133.0)  
Spread cm3 : 6.00  
1000 s: (8.)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 1070...1080

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:  
:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 s 1  
 Edition : 06.07.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 878 715

Injection pump  
 Pump designation : PE8P110A320LS3842-2  
 EP type number : 0 411 818 722  
 Governor  
 Governor design. : RSV350...1050POA824-13

Governer no. : 0 421 833 341

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow quantity min. 1/h: 100...120

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant. per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 Phasing : 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 13.7...13.9  
 100 s: (13.4...14.1)

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.8)

2nd speed rpm : 350.0  
 Rack travel in mm : 8.1...8.7  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1030  
 Del.quantity : 137.0...139.0  
 1000 : (134.5...141.5)

Spread cm<sup>3</sup> : 4.00  
 1000 : (8.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 91...99

Testing:

1st rack travel in: 11.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 14.00  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 8.4

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 8.30...8.50  
Rack travel in mm : 2.00  
Speed rpm : 410...470

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 124.0...128.0  
1000 s: (121.0...131.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 a1  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 035 022  
 Injection pump  
 Pump designation : PES5P120A720/3LS512  
 EP type number : 0 412 025 021  
 Governor  
 Governor design. : RQ300/1000PA813-14  
 Governor no. : 0 421 80<sup>1</sup> 530

Customer-spec. information  
 Customer : MAN

Engine : D2865LF02

1st version kW : 199.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 750  
 Rack travel in mm : 10.70...10.80  
 Del.quantity cm<sup>3</sup>/ : 20.5...20.7  
 100 s: (20.2...21.0)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.2...4.6  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1000  
 Del.quantity : 205.0...207.0  
 1000 : (202.0...210.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:  
 1st rack travel in: 9.50

Speed rpm : 1045...1060  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 300  
Rack travel in mm : 4.30...4.50  
Rack travel in mm : 2.00  
Speed rpm : 335...375

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 750  
Rack travel in m: 10.90...11.10  
3rd speed rpm : 850  
Rack travel in m: 10.70...10.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.70...10.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.50  
2nd pressure hPa : 100  
Rack travel in m: 8.70...8.80  
3rd pressure hPa : 350  
Rack travel in m: 10.40...10.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1000

Del.quantity cm<sup>3</sup>/ : 200.0...204.0  
1000 s: (197.0...207.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 197.0...203.0  
1000 s: (194.0...206.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.20...4.60  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 3-7043  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 5  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 a2  
 Edition : 21.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 035 023  
 Injection pump  
 Pump designation : PES5P120A720/3LS512  
 EP type number : 0 412 025 021  
 Governor  
 Governor design. : RQ300/950PA813-15  
 Governor no. : 0 421 80<sup>1</sup> 532

Customer-spec. information  
 Customer : MAN

Engine : D2865LFD/LU/01

1st version kW : 198.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 750  
 Rack travel in mm : 11.70...11.80  
 Del.quantity cm<sup>3</sup>/ : 21.9...22.1  
 100 s: (21.6...22.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.6...4.8  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1000  
 Del.quantity : 219.0...221.0  
 1000 : (216.0...224.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:  
 1st rack travel in: 10.60

Speed rpm : 995...1010  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.20  
Speed rpm : 300  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 750  
Rack travel in m: 12.10...12.30  
3rd speed rpm : 825  
Rack travel in m: 11.90...12.10

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.70...11.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.40...8.60  
2nd pressure hPa : 110  
Rack travel in m: 8.80...8.90  
3rd pressure hPa : 450  
Rack travel in m: 11.00...11.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 950

Del.quantity cm<sup>3</sup>/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 210.0...216.0  
1000 s: (207.0...219.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 128.0...130.0  
1000 s: (125.0...133.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 995...1010

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.60...4.80  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 3-7044  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 5  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 b1  
 Edition : 21.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 035 024  
 Injection pump  
 Pump designation : PES5P120A720/3LS512  
 EP type number : 0 412 025 021  
 Governor  
 Governor design. : RQV300...1000PA876-5  
 Governor no. : 0 421 813 865

Customer-spec. information  
 Customer : MAN

Engine : D2865LF02  
 1st version kW : 199.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 750  
 Rack travel in mm : 10.70...10.80  
 Del.quantity cm<sup>3</sup>/ : 20.5...20.7  
 100 s: (20.2...21.0)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 4.3...4.5  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
 travel mm : 9.90...10.10  
 2nd speed rpm : 300  
 travel mm : 1.60...1.80  
 3rd speed rpm : 500  
 travel mm : 3.40...3.90  
 4th speed rpm : 800  
 travel mm : 6.80...7.20  
 5th speed rpm : 1250  
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1100  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1000

Del.quantity : 205.0...207.0  
1000 : (202.0...210.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 296...304

Testing:  
1st rack travel in: 9.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 254...262

Testing:  
Speed rpm : 100  
Minimum rack trave: 5.90  
Speed rpm : 300  
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION  
Speed rpm : 280...400

TORQUE CONTROL  
Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 1000  
Rack travel in m: 10.50...10.60  
3rd speed rpm : 900  
Rack travel in m: 10.50...10.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.70...10.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.50  
2nd pressure hPa : 100  
Rack travel in m: 8.70...8.80  
3rd pressure hPa : 350

Rack travel in m: 10.40...10.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 200.0...204.0  
1000 s: (197.0...207.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 197.0...203.0  
1000 s: (194.0...206.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.30...4.50  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks: : MAN-NR. 7045

Setting and blocking of pointer of  
start-of-delivery sensor ori cyl. 5  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 b2  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 035 025  
 Injection pump  
 Pump designation : PES5P120A720/3LS512  
 EP type number : 0 412 025 021  
 Governor  
 Governor design. : RQV300...950PA876-8  
 Governor no. : 0 421 813 868

Customer spec. information  
 Customer : MAN

Engine : D2865LFO/LU/01

1st version kW : 198.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 21.9...22.1

100 s: (21.6...22.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995

travel mm : 9.70...9.90

2nd speed rpm : 300

travel mm : 1.00...1.20

3rd speed rpm : 500

travel mm : 3.40...4.00

4th speed rpm : 750

travel mm : 6.60...7.00

5th speed rpm : 1250

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 219.0...221.0  
1000 : (216.0...224.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 296...304

Testing:  
1st rack travel in: 10.10  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 253...261

Testing:  
Speed rpm : 100  
Minimum rack trave: 5.50  
Speed rpm : 300  
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION  
Speed rpm : 320...440

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 11.10...11.30  
2nd speed rpm : 750  
Rack travel in m: 11.20...11.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.20...11.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.90...8.10  
2nd pressure hPa : 110  
Rack travel in m: 8.30...8.40  
3rd pressure hPa : 450  
Rack travel in m: 10.20...10.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 950  
Del.quantity cm3/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 210.0...216.0  
1000 s: (207.0...219.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 128.0...130.0  
1000 s: (125.0...133.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks: : MAN-NR. 7046

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 5  
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a21  
 Edition : 29.06.90  
 Replaces : 2.10.89  
 Test oil : ISO-4113

Combination no. : 0 402 036 057

Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQV300.. 1100PA700-1  
 Governor no. : 0 421 813 528

Customer-spec. information  
 Customer : MAN

Engine : D2866LF

1st version kW : 243.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

H01

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.30...11.40

Del.quantity cm<sup>3</sup>/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.1

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.40...1.60

2nd speed rpm : 850

travel mm : 5.60...5.90

3rd speed rpm : 1100

travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 202.0...204.0

1000 : (199.0...207.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

#### Testing:

1st rack travel in: 9.90  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 80...88

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00

#### CONSTANT REGULATION

Speed rpm : 310...410

#### TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 1100  
Rack travel in m: 10.90...11.10  
3rd speed rpm : 850  
Rack travel in m: 11.30...11.50  
4th speed rpm : 975  
Rack travel in m: 11.00...11.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 85  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 280

HQ2

Rack travel in m: 10.80...11.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 206.0...208.0  
1000 s: (203.0...211.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 203.0...209.0  
1000 s: (200.0...212.0)  
Aneroid pressure h: 280  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 184.0...196.0  
1000 s: (181.0...199.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...5.10  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a38  
Edition : 29.06.90  
Replaces : 15.12.89  
Test oil : ISO-4113  
  
Combination no. : 0 402 036 078  
  
Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1170PA813-8  
Governor no. : 0 421 801 483

Customer-spec. information  
Customer : MAN

Engine : D2866LF/290  
  
1st version kW : 213.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 019  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,8  
  
Test lines : 1 680 750 067  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

H03

Prestroke mm : 2.80...2.90  
(2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100  

---

Rack travel in mm : 9.80...9.90  

---

Del.quantity cm<sup>3</sup>/ : 18.4...18.6  
100 s : (18.1...18.9)  

---

Spread cm<sup>3</sup> : 0.5  
100 s : (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.6...5.0  
Del.quantity cm<sup>3</sup>/ : 1.2...1.8  
100 s : (0.9...2.1)  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1000  
Del.quantity : 184.0...186.0  
1000 : (181.0...189.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 15.5

Testing:

1st rack travel in: 8.80  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### TORQUE CONTROL

Dimension a mm : 0.35  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.80...9.90  
2nd speed rpm : 750  
Rack travel in m: 10.60...10.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.10...10.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 85  
Rack travel in m: 9.10...9.20  
3rd pressure hPa : 160  
Rack travel in m: 9.80...10.00

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 185.0...188.0  
1000 s: (182.0...191.0)

Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: 160  
Speed rpm : 500  
Del.quantity cm3/ : 157.0...169.0  
1000 s: (154.0...172.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.80  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.60...5.00  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7760

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a42  
 Edition : 06.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 081  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQ300/1070PA813-16  
 Governor no. : 0 421 801 531

Customer-spec. information  
 Customer : MAN

Engine : D2866LF 04..LH01

1st version kW : 21.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

H05

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750  
 Rack travel in mm : 10.20...10.30  
 Del.quantity cm<sup>3</sup>/ : 18.3...18.5  
 100 s : (18.0...18.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.7...4.9  
 Del.quantity cm<sup>3</sup>/ : 1.2...1.8  
 100 s : (0.9...2.1)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1000  
 Del.quantity : 183.0...185.0  
 1000 : (180.0...188.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 8.80  
Speed rpm : 1045...1060  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 355...395

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 9.80...9.90  
2nd speed rpm : 750  
Rack travel in m: 10.50...10.70  
3rd speed rpm : 850  
Rack travel in m: 10.10...10.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.20...10.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 160  
Rack travel in m: 9.70...10.00

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1000

H06

Del.quantity cm3/ : 179.0...185.0  
1000 s: (176.0...188.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 8.80  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 3-7053

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a43  
 Edition : 14.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 082  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQV300.. 1000PA876-7  
 Governor no. : 0 421 813 867

Customer-spec. information  
 Customer : MAN

Engine : D2866LF 04..LH01

1st version kW : 221.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

H07

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.20...10.30

Del.quantity cm<sup>3</sup>/ : 18.3...18.5

100 s : (18.0...18.8)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s : (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
 travel mm : 9.90...10.10

2nd speed rpm : 300  
 travel mm : 1.60...1.80

3rd speed rpm : 500  
 travel mm : 3.40...4.00

4th speed rpm : 800  
 travel mm : 6.70...7.10

5th speed rpm : 1250  
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1100  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750

Aneroid pressure h: 1000  
Del.quantity : 183.0...185.0  
1000 : (180.0...188.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 296...304

Testing:  
1st rack travel in: 8.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 256...264

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION  
Speed rpm : 280...390

TORQUE CONTROL  
Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 9.80...9.90  
2nd speed rpm : 750  
Rack travel in m: 10.20...10.30  
3rd speed rpm : 900  
Rack travel in m: 10.00...10.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.20...10.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40

3rd pressure hPa : 160  
Rack travel in m: 9.70...10.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 179.0...185.0  
1000 s: (176.0...188.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.80  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks: : MAN-NR. 3-7054

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 j2  
 Edition : 06.07.90  
 Replaces : 30.3.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 729  
 Injection pump  
 Pump designation : PES6P120A720/3LS3205  
 EP type number : 0 412 026 729  
 Governor  
 Governor design. : RQ300/1100PA813-7  
 Governor no. : 0 421 80<sup>1</sup> 474

Customer-spec. information  
 Customer : MAN

Engine : D2866LXUH

1st version kW : 273.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 13.50...13.60  
 Del.quantity cm<sup>3</sup>/ : 24.2...24.4  
 100 s: (23.9...24.7)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.3...4.5  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 650  
 Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1200  
 Del.quantity : 242.0...244.0  
 1000 : (239.0...247.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 650  
 Rack travel in mm : 15.5

Testing:  
 1st rack travel in: 12.10

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.4

Testing:

Speed rpm : 100  
Minimum rack trave: 5.90  
Speed rpm : 300  
Rack travel in mm : 4.30...4.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 700  
Rack travel in m: 14.30...14.40  
3rd speed rpm : 885  
Rack travel in m: 13.80...14.10  
4th speed rpm : 935  
Rack travel in m: 13.30...13.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 190  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 520  
Rack travel in m: 12.00...12.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

H10

Speed rpm : 1100  
Del.quantity cm3/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 120.0...122.0  
1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 230.0...250.0  
1000 s: (226.0...254.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.30...4.50  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7946

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 p  
 Edition : 03.08.90  
 Replaces : 30.3.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 733  
 Injection pump  
 Pump designation : PES6P120A720/3LS3247  
 EP type number : 0 412 026 735  
 Governor  
 Governor design. : RQV300...1100PA876-4  
 Governor no. : 0 421 813 851

Customer-spec. information  
 Customer : MAN

Engine : D2866LXF/A00  
 1st version kW : 273.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 14.50...15.50  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
 & maximum rack tra: 14.5...15.5  
 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 15.00...15.10  
 Del.quantity cm<sup>3</sup>/ : 24.2...24.4  
 100 s: (23.9...24.7)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 4.8...5.2  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145  
 travel mm : 8.30...8.50  
 2nd speed rpm : 300  
 travel mm : 1.10...1.30  
 3rd speed rpm : 500  
 travel mm : 2.90...3.50  
 4th speed rpm : 900  
 travel mm : 5.90...6.30  
 5th speed rpm : 1450  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1140  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 1200  
Del.quantity : 242.0...244.0  
1000 : (239.0...247.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 298...306

Testing:  
1st rack travel in: 13.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 259...267

Testing:  
Speed rpm : 200  
Minimum rack trave: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 320...430

TORQUE CONTROL  
Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 700  
Rack travel in m: 15.00...15.10  
3rd speed rpm : 950  
Rack travel in m: 14.70...14.90

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement  
Speed 1/min : 500

H12

1st pressure hPa : -  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 110  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 470  
Rack travel in m: 14.00...14.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 95.0...101.0  
1000 s: (92.0...104.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.60  
Speed rpm : 1140...1150

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.20  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks: : MAN-NR. 2-7890

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u2  
 Edition : 21.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 736  
 Injection pump  
 Pump designation : PES6P120A720/3LS3255  
 EP type number : 0 412 026 739  
 Governor  
 Governor design. : RQ300/1100PA813-12  
 Governor no. : 0 421 801 518

Customer-spec. information  
 Customer : MAN

Engine : D2866LF01  
 1st version kW : 273.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 14.50...15.50  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
 & maximum rack tra: 14.5...15.5  
 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 15.00...15.10  
 Del. quantity cm<sup>3</sup>/ : 24.2...24.4  
 100 s: (23.9...24.7)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 5.0...5.4  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1200  
 Del. quantity : 242.0...244.0  
 1000 : (239.0...247.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.80  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300  
Rack travel in mm : 5.2

Testing:

Speed rpm : 200  
Minimum rack travel: 6.70  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.80...14.90  
2nd speed rpm : 700  
Rack travel in m: 15.40...15.60  
3rd speed rpm : 900  
Rack travel in m: 15.20...15.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.90  
2nd pressure hPa : 110  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 470  
Rack travel in m: 14.00...14.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm3/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Speed rpm : 700  
Del.quantity cm3/ : 90.0...100.0  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.80  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.40  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7889

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u3  
 Edition : 06.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 737  
 Injection pump  
 Pump designation : PES6P120A720/3LS3255  
 EP type number : 0 412 026 739  
 Governor  
 Governor design. : RQV300...1100PA876-4  
 Governor no. : 0 421 813 851

Customer-spec. information  
 Customer : MAN

Engine : D2866LF01

1st version kw : 273.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 14.50...15.50  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
 & maximum rack tra: 14.5...15.5  
 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del. quantity cm<sup>3</sup>/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.1

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145  
 travel mm : 8.30...8.50

2nd speed rpm : 300  
 travel mm : 1.10...1.30

3rd speed rpm : 500  
 travel mm : 3.00...3.40

4th speed rpm : 800  
 travel mm : 5.20...5.60

5th speed rpm : 1400  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700  
Aneroid pressure h: 1200  
Del.quantity : 242.0...244.0  
1000 : (239.0...247.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 296...304

Testing:

1st rack travel in: 13.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1255...1285  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 259...267

Testing:

Speed rpm : 200  
Minimum rack travel: 6.00  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 320...430

TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.70...14.80  
2nd speed rpm : 700  
Rack travel in m: 15.00...15.10  
3rd speed rpm : 900  
Rack travel in m: 14.80...14.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

H16

1st pressure hPa : -  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 110  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 470  
Rack travel in m: 14.30...14.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 26.0  
1000 s: (239.0)  
Speed rpm :  
Del.quantity cm<sup>3</sup>/ : 1.0  
1000 s: (100.0)  
Spread cm<sup>3</sup> :  
1000 s: :  
Speed :  
Del.quantity : 0...136.0  
 : 0...139.0

BREAKAW

1st version

1mm rack travel less than

full load rack tr: 13.70  
Speed rpm : 1140...1150

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...5.10  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7890



Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 v  
 Edition : 29.06.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 738  
 Injection pump  
 Pump designation : PES6P120A720/3LS3254  
 EP type number : 0 412 026 740  
 Governor  
 Governor design. : RQV300...950PA959  
 Governor no. : 0 421 813 860

Customer-spec. information  
 Customer : MAN

Engine : D2866LF02  
 1st version kw : 250.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 14.50...15.50  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
 & maximum rack tra: 14.5...15.5  
 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 15.00...15.10  
 Del.quantity cm<sup>3</sup>/ : 24.2...24.4  
 100 s: (23.9...24.7)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 4.7...5.1  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995  
 travel mm : 9.70...9.90  
 2nd speed rpm : 300  
 travel mm : 0.90...1.10  
 3rd speed rpm : 500  
 travel mm : 3.40...4.00  
 4th speed rpm : 750  
 travel mm : 6.60...7.00  
 5th speed rpm : 1250  
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1025  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700  
Aneroid pressure h : 1200  
Del.quantity : 242.0...244.0  
1000 : (239.0...247.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 298...306

Testing:

1st rack travel in: 13.50  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 254...262

Testing:

Speed rpm : 200  
Minimum rack trave: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 320...430

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 110  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 470  
Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 228.0...234.0  
1000 s: (225.0...237.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...5.10  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7942

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 w  
 Edition : 21.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 739  
 Injection pump  
 Pump designation : PES6P120A720/3LS3254  
 EP type number : 0 412 026 741  
 Governor  
 Governor design. : RQ300/957PA813-10  
 Governor no. : 0 421 801 493

Customer-spec. information  
 Customer : MAN

Engine : D2866LF02

1st version kw : 250.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

H2O

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 14.50...15.50  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
 & maximum rack tra: 14.5...15.5  
 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.1

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 550

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.50  
Speed rpm : 995...1110  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.90

Testing:

Speed rpm : 200  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 320...430

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 700  
Rack travel in m: 15.10...15.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 110  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 470  
Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

H21

1st version

Aneroid pressure h: 1200  
Speed rpm : 950  
Del.quantity cm3/ : 228.0...234.0  
1000 s: (225.0...237.0)  
Speed rpm : 700  
Del.quantity cm3/ : 93.0...101.0  
1000 s: (90.0...104.0)  
Spread cm3 : 10.00  
1000 s: (14.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 995...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...5.10  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7962

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u4  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 742  
 Injection pump  
 Pump designation : PES6P120A720/3LS3255  
 EP type number : 0 412 026 739  
 Governor  
 Governor design. : RQ300/1100PA813-7  
 Governor no. : 0 421 80<sup>1</sup> 474

Customer-spec. information  
 Customer : MAN

Engine : D2866LF01

1st version kw : 273.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 14.50...15.50  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
 & maximum rack tra: 14.5...15.5  
 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del. quantity cm<sup>3</sup>/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.1

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.50  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.9

Testing:

Speed rpm : 200  
Minimum rack travel: 5.90  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 700  
Rack travel in m: 15.10...15.30  
3rd speed rpm : 900  
Rack travel in m: 14.80...15.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 110  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 520  
Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm3/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...5.10  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7946

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 c  
 Edition : 06.07.90  
 Replaces : 6.4.90  
 Test oil : ISO-4113

Combination no. : 0 402 046 219

Injection pump  
 Pump designation : PES6P120A320RS426  
 EP type number : 0 412 026 039  
 Governor  
 Governor design. : RQV250...1100PA570  
 Governor no. : 0 421 813 295

Customer-spec. information  
 Customer : RVI

Engine : MIDS 063540

1st version kW : 195.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

---

Rack travel in mm : 10.30...10.40

---

Del.quantity cm3/ : 17.9...18.1  
 100 s: (17.6...18.4)

---

Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 4.5...4.7  
 Del.quantity cm3/ : 1.9...2.5  
 100 s: (1.6...2.8)

Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.50...1.60  
 2nd speed rpm : 800  
 travel mm : 4.70...4.90  
 3rd speed rpm : 1100  
 travel mm : 6.80...7.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1270  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 700  
 Del.quantity : 179.0...181.0  
 1000 : (176.0...184.0)

Spread cm3 : 5.00  
 1000 : (9.00)

RATED SPEED



1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 8.10  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 14.00  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 64...72

Testing:  
Speed rpm : 200  
Minimum rack travel: 5.70  
Speed rpm : 250  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 275...400

TORQUE CONTROL  
Dimension a mm : 1.20  
Torque control curve - 1st version  
1st speed rpm : 650  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 1100  
Rack travel in m: 9.00...9.20  
3rd speed rpm : 1020  
Rack travel in m: 9.30...9.50  
4th speed rpm : 890  
Rack travel in m: 9.90...10.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.30...10.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.40...8.60  
2nd pressure hPa : 290  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 245  
Rack travel in m: 8.90...9.10

START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 164.0...170.0  
1000 s: (161.0...173.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.10  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...165.0  
1000 s: (131.0...169.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.50...4.70  
Del.quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (16.0...28.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery mark 12° cam angle  
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 k  
 Edition : 20.07.90  
 Replaces : 6.4.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 340  
 Injection pump  
 Pump designation : PES6P120A320RS525  
 EP type number : 0 412 026 058  
 Governor  
 Governor design. : RQV300...1050PA955  
 Governor no. : 0 421 813 856

Customer-spec. information  
 Customer : RVI

Engine : MIDS062045J

1st version kW : 160.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.20...9.30

Del. quantity cm<sup>3</sup>/ : 13.5...13.7

100 s : (13.2...14.0)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s : (1.2...2.4)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

travel mm : 8.00...8.20

2nd speed rpm : 300

travel mm : 1.10...1.50

3rd speed rpm : 430

travel mm : 3.40...4.00

4th speed rpm : 1400

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1075

Rack travel in mm : 15.20...17.80

FUL. LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 135.0...137.0

1000 : (132.0...140.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 298...306

#### Testing:

1st rack travel in: 8.20  
Speed rpm : 1120...1130  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 244...252

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed rpm : 310...430

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 124.0...132.0  
1000 s: (121.0...135.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 8.20  
Speed rpm : 1120...1130

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

H27

Speed rpm : 300  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 15.0...21.0  
1000 s: (12.0...24.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ROL 12,2 h1  
 Edition : 20.07.90  
 Replaces : 9.3.87  
 Test oil : ISO-4113

Combination no. : 0 402 046 772

Injection pump  
 Pump designation : PES6P120A32ORS3170  
 EP type number : 0 412 026 722  
 Governor  
 Governor design. : RQV250...950PA794-1  
 Governor no. : 0 421 813 579

Customer-spec. information  
 Customer : ROLLS ROYCE

Engine : EAGLE LE 300

1st version kW : 204.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 900

---

Rack travel in mm : 12.90...13.00

---

Del.quantity cm<sup>3</sup>/ : 21.5...21.7  
 100 s: (21.2...22.0)

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.6...5.8  
 Del.quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s: (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.50...1.70  
 2nd speed rpm : 350  
 travel mm : 2.20...2.70  
 3rd speed rpm : 500  
 travel mm : 3.00...3.40  
 4th speed rpm : 1000  
 travel mm : 8.00...8.20  
 5th speed rpm : 1060  
 travel mm : 8.90...9.20

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1000  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Aneroid pressure h: 700  
 Del.quantity : 215.0...217.0  
 1000 : (212.0...220.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

#### Testing:

1st rack travel in: 11.90  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1055...1085  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 81...89

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 250...470

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.90...13.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.50...11.70  
2nd pressure hPa : 330  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 440  
Rack travel in m: 12.60...12.80

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 203.0...209.0  
1000 s: (200.0...212.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 170.0...174.0  
1000 s: (167.0...177.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...170.0  
1000 s: (136.0...174.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 f  
 Edition : 01.06.90  
 Replaces : 30.9.88  
 Test oil : ISO-4113

Combination no. : 0 402 046 798

Injection pump  
 Pump designation : PES6P120A32ORS3139  
 EP type number : 0 412 026 718  
 Governor  
 Governor design. : RQ275/1050PA893  
 Governor no. : 0 421 80<sup>1</sup> 442

Customer-spec. information  
 Customer : RVI

Engine : MIDR 062045 M

1st version kw : 236.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

---

Rack travel in mm : 11.80...11.90

---

Del. quantity cm<sup>3</sup>/ : 21.8...22.0  
 100 s: (21.5...22.3)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 275.0  
 Rack travel in mm : 5.2...5.6  
 Del. quantity cm<sup>3</sup>/ : 2.2...2.8  
 100 s: (1.9...3.1)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 1000  
 Del. quantity : 218.0...220.0  
 1000 : (215.0...223.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:  
 1st rack travel in: 10.80  
 Speed rpm : 1115...1130  
 2nd rack travel in: 4.30

Speed rpm : 1205...1235  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.10  
Speed rpm : 275  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.30  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 600  
Rack travel in m: 0.40...0.60  
2nd speed rpm : 1050  
Rack travel in m: 0.30...0.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.90  
2nd pressure hPa : 360  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 160  
Rack travel in m: 9.40...9.60

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 217.0...223.0  
1000 s: (214.0...226.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 101.0...103.0  
1000 s: (98.0...106.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1115...1130

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...165.0  
1000 s: (131.0...169.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.20...5.60  
Del.quantity cm<sup>3</sup>/ : 22.0...28.0  
1000 s: (19.0...31.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

#### APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 7,7 a  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 815  
 Injection pump  
 Pump designation : PES6P120A720RS3249  
 EP type number : 0 412 026 737  
 Governor  
 Governor design. : RQV300...1100PA954K  
 Governor no. : 0 421 815 243

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8360.46.007

1st version kW : 196.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 105  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 008  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 13.60...13.70  
 Del. quantity cm<sup>3</sup>/ : 21.1...21.3  
 100 s: (20.8...21.6)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.0...5.4  
 Del. quantity cm<sup>3</sup>/ : 2.0...2.6  
 100 s: (1.7...2.9)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1160  
 travel mm : 10.60...10.80  
 2nd speed rpm : 300  
 travel mm : 1.00...1.40  
 3rd speed rpm : 850  
 travel mm : 6.60...7.00  
 4th speed rpm : 1350  
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 1500  
 Del. quantity : 211.0...213.0  
 1000 : (208.0...216.0)



Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 68...76

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 275  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 330...390

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.60...13.70  
2nd speed rpm : 700  
Rack travel in m: 12.00...12.30  
3rd speed rpm : 300  
Rack travel in m: 9.80...10.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1100  
Pressure hPa : 1500  
Rack travel mm : 13.60...13.70

Measurement  
Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 810  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 430  
Rack travel in m: 10.00...10.30

START CUT-OUT

J05

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 182.0...188.0  
1000 s: (179.0...191.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 96.0...98.0  
1000 s: (93.0...101.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (96.0...124.0)

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 8,8 a  
 Edition : 14.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 816  
 Injection pump  
 Pump designation : PES6P120A32ORS3253  
 EP type number : 0 412 026 738  
 Governor  
 Governor design. : RQV250...1100PA956  
 Governor no. : 0 421 813 857

Customer-spec. information  
 Customer : ENASA

Engine : 97 R1 AX

1st version kW : 221.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650  
 Rack travel in mm : 12.70...12.80  
 Del.quantity cm<sup>3</sup>/ : 18.9...19.1  
 100 s: (18.6...19.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 250.0  
 Rack travel in mm : 7.2...7.4  
 Del.quantity cm<sup>3</sup>/ : 2.5...3.1  
 100 s: (2.2...3.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 1.70...2.30  
 3rd speed rpm : 700  
 travel mm : 4.30...4.90  
 4th speed rpm : 1155  
 travel mm : 8.40...8.60  
 5th speed rpm : 1250  
 travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1170  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 900

Del.quantity : 189.0...191.0  
1000 : (186.0...194.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 103...111

#### Testing:

1st rack travel in: 11.70  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 70...78

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

#### CONSTANT REGULATION

Speed rpm : 250...400

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.70...12.80

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...11.00  
2nd pressure hPa : 670  
Rack travel in m: 12.20...12.30  
3rd pressure hPa : 530  
Rack travel in m: 11.40...11.60

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

J07

Aneroid pressure h: 900  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 194.0...200.0  
1000 s: (191.0...203.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 128.0...130.0  
1000 s: (125.0...133.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1150...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 y  
 Edition : 20.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 817  
 Injection pump  
 Pump designation : PES6P110A72ORS3104  
 EP type number : 0 412 016 712  
 Governor  
 Governor design. : RQV300...1150PA850-5  
 Governor no. : 0 421 813 871

Customer-spec. information  
 Customer : KHD

Engine : BF6L513R

1st version kW : 177.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

J08

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150  
 Rack travel in mm : 13.40...13.50  
 Del. quantity cm<sup>3</sup>/ : 15.1...15.3  
 100 s : (14.8...15.6)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.9...8.1  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s : (1.3...2.4)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 2.10...2.50  
 2nd speed rpm : 450  
 travel mm : 3.40...4.00  
 3rd speed rpm : 700  
 travel mm : 5.10...5.70  
 4th speed rpm : 1190  
 travel mm : 8.90...9.10  
 5th speed rpm : 1300  
 travel mm : 10.00...10.40

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1160  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Aneroid pressure h : 900  
 Del. quantity : 151.0...153.0  
 1000 : (148.0...156.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

RATED SPEED

1st version  
Control lever  
position degrees: 119...127

Testing:

1st rack travel in: 12.40  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 89...97

Testing:

Speed rpm : 100  
Minimum rack travel: 9.40  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

Speed rpm : 320...520

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 450  
Pressure hPa : 900  
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 450

1st pressure hPa : -  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 510  
Rack travel in m: 13.20...13.30  
3rd pressure hPa : 410  
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 153.0...157.0  
1000 s: (151.0...159.0)

Aneroid pressure h: -

Speed rpm : 450  
Del.quantity cm<sup>3</sup>/ : 123.0...125.0  
1000 s: (120.0...128.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 w  
Edition : 06.07.90  
Replaces : 15.3.90  
Test oil : ISO-4113

Combination no. : 0 402 075 700

Injection pump  
Pump designation : PES5P110A720LS3218  
EP type number : 0 412 015 702  
Governor  
Governor design. : RSV350...1100POA487-  
7

Governer no. : 0 421 833 314

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM449

1st version kW : 140.0  
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
: (4.25...4.45)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 13.5...13.7

100 s: (13.2...13.9)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.7

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del.quantity : 135.0...137.0

1000 : (132.5...139.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 93...101

Testing:

1st rack travel in: 9.80  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.5  
Speed rpm : 350  
Rack travel in mm : 6.30...6.70  
Rack travel in mm : 2.00  
Speed rpm : 400...467

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 111.0...115.0  
1000 s: (108.0...118.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.80  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:  
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,4 L21  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 053A  
 Injection pump  
 Pump designation : PES6P110A820LS442-1  
 EP type number : 0 412 016 063  
 Governor  
 Governor design. : RSV350...1100POA485  
 Governor no. : 0 421 833 168

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 407

1st version kW : 147.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00

J12

Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.70...10.80

Del.quantity cm<sup>3</sup>/ : 10.5...10.7

100 s: (10.2...10.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.8...8.0

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 1250

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 105.0...107.0

1000 : (102.5...109.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 9.70

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1220...1250



4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.9  
Speed rpm : 350  
Rack travel in mm : 7.80...8.00  
Rack travel in mm : 2.00  
Speed rpm : 435...495

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 92.0...96.0  
1000 s: (89.0...99.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,4 q 4  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 718A  
 Injection pump  
 Pump designation : PES6P120A820LS3112-1  
 EP type number : 0 412 026 716  
 Governor  
 Governor design. : RSV350...1100POA500  
 Governor no. : 0 421 833 169

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM407A

1st version kW : 200.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test Lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 11.10...11.20  
 Del.quantity cm3/ : 16.6...16.8  
 100 s: (16.3...17.1)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 4.7...4.9  
 Del.quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm3 : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 700  
 Del.quantity : 166.0...168.0  
 1000 : (163.0...171.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 44...52

Testing:

1st rack travel in: 10.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.8  
Speed rpm : 350  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 420...467

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 600  
Rack travel in m: 11.40...11.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.40...11.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.60  
2nd pressure hPa : 500  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 400  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 168.0...174.0  
1000 s: (165.0...177.0)  
Spread cm<sup>3</sup> : 7.50  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 143.0...145.0  
1000 s: (140.0...148.0)

Spread cm<sup>3</sup> : 7.50  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 1  
 Edition : 08.08.90  
 Replaces : 8.6.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 722  
 Injection pump  
 Pump designation : PES6P120A72ORS3203  
 EP type number : 0 412 026 728  
 Governor  
 Governor design. : RSV400...1100P2A534  
 Governor no. : 0 421 833 275

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076 HF  
 1st version kW : 205.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 101  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X3.00X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 12.50...12.60  
 Del. quantity cm<sup>3</sup>/ : 16.8...17.0  
 100 s: (16.6...17.2)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.2...5.4  
 Del. quantity cm<sup>3</sup>/ : 2.0...2.4  
 100 s: (1.8...2.6)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 1200  
 Del. quantity : 168.0...170.0  
 1000 : (166.0...172.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 36...44

Testing:

1st rack travel in: 11.50  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1185...1195  
3rd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.20...5.40

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 750  
Rack travel in m: 13.00...13.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.30...10.50

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 585  
Rack travel in m: 11.10...11.20  
2nd pressure hPa : 770  
Rack travel in m: 12.30...12.70  
3rd pressure hPa : 1200  
Rack travel in m: 13.00...13.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 174.5...178.5  
1000 s: (172.5...180.5)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 117.5...121.5  
1000 s: (114.5...124.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 20.0...24.0  
1000 s: (18.0...26.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE32035  
Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 g  
 Edition : 05.10.90  
 Replaces : 2.5.90  
 Test oil : ISO-4113

Combination no. : 0 402 076 733

Injection pump  
 Pump designation : PES6P110A72ORS3224  
 EP type number : 0 412 016 726  
 Governor  
 Governor design. : RSV475...1050P2A534-5  
 Governor no. : 0 421 833 313

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6101 AT 001

1st version kW : 170.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

Prestroke mm : 3.35...3.45  
 : (3.30...3.50)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 13.20...13.30  
 Del.quantity cm<sup>3</sup>/ : 15.8...16.0  
 100 s : (15.6...16.2)  
 Spread cm<sup>3</sup> : 0.4  
 100 s : (0.6)

2nd speed rpm : 475.0  
 Rack travel in mm : 6.0...6.2  
 Del.quantity cm<sup>3</sup>/ : 1.0...1.4  
 100 s : (0.8...1.7)  
 Spread cm<sup>3</sup> : 0.6  
 100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Aneroid pressure h: 900  
 Del.quantity : 158.0...160.0  
 1000 : (156.0...162.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

RATED SPEED

1st version  
 Control lever  
 position degrees: 36...44

Testing:

1st rack travel in: 12.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1135...1145  
3rd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 475  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 475  
Rack travel in mm : 6.00...6.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 335  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 185  
Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 120.0...124.0  
1000 s: (117.0...127.0)

BREAKAWAY

1st version

1mm rack travel less than  
  
full load rack tr: 12.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 125.0...145.0  
1000 s: (120.0...150.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 475  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 10.5...14.5  
1000 s: (8.0...17.0)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE39856

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 g 9  
 Edition : 08.08.90  
 Replaces : 2.5.90  
 Test oil : ISO-4113

Combination no. : 0 402 076 737

Injection pump  
 Pump designation : PES6P110A72ORS3083-1  
 EP type number : 9 410 231 027  
 Governor  
 Governor design. : RSV475...1050POA455-

Governer no. : 0 421 833 340

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466AT014

1st version kW : 151.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55  
 : (3.40...3.60)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm<sup>3</sup>/ : 13.1...13.3

100 s: (12.9...13.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 475.0

Rack travel in mm : 6.2...6.4

Del.quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 131.5...133.5

1000 : (129.5...135.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:



1st rack travel in: 10.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1195...1205  
3rd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 475  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 475  
Rack travel in mm : 6.20...6.40

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 700  
Rack travel in m: 12.00...12.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 136.5...140.5  
1000 s: (134.5...142.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 475  
Rack travel in mm : 6.20...6.40  
Del. quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (9.0...17.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE44340

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 12° cam angle  
after start of delivery cyl. 1.

#### APPLICATION

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 16,3 b  
 Edition : 05.10.90  
 Replaces : 2.2.90  
 Test oil : ISO-4113

Combination no. : 0 402 638 803

Injection pump  
 Pump designation : PE8P120A12ORS7141  
 EP type number : 0 412 628 823  
 Governor  
 Governor design. : RQ750PA871  
 Governor no. : 0 421 801 404

Customer-spec. information  
 Customer : PERKINS

Engine : CV8-320 G

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 6- 5- 4- 8-  
 7- 2

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

---

Rack travel in mm : 14.40...14.50

---

Del.quantity cm<sup>3</sup>/ : 33.3...33.5  
 100 s: (33.0...33.8)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.5...7.7  
 Del.quantity cm<sup>3</sup>/ : 3.6...4.2  
 100 s: (3.3...4.5)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del.quantity : 333.0...335.0  
 1000 : (330.0...338.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 85...89

Testing:  
 1st rack travel in: 13.40  
 Speed rpm : 750...755  
 2nd rack travel in: 4.00  
 Speed rpm : 795...805  
 4th rack travel in: 900  
 Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 750...755

Remarks:

APPLICATION :

Generator



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 b  
 Edition : 31.07.90  
 Replaces : 2.2.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 812  
 Injection pump  
 Pump designation : PE12P120A520LS7820  
 EP type number : 0 412 620 814  
 Governor  
 Governor design. : RQV350...115QPA870-4  
 Governor no. : 0 421 813 717

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 19.00...21.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.30...14.40

Del.quantity cm<sup>3</sup>/ : 31.2...31.4

100 s: (30.9...31.7)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...6.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.30...1.80

2nd speed rpm : 600  
 travel mm : 3.30...3.80

3rd speed rpm : 960  
 travel mm : 5.30...5.80

4th speed rpm : 1206  
 travel mm : 7.90...8.40

5th speed rpm : 1291  
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 1800  
Del.quantity : 312.0...314.0  
1000 : (309.0...317.0)  
Spread cm3 : 6.00  
1000 : (10.00)

RATED SPEED

1st version

Control lever  
position degrees: 113...121

Testing:

1st rack travel in: 13.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 62...70

Testing:

Speed rpm : 250  
Minimum rack trave: 7.00  
Speed rpm : 350  
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 7.80...8.10

Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 9.20...9.30  
2nd pressure hPa : 1100  
Rack travel in m: 13.40...13.70

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800  
Speed rpm : 750  
Del.quantity cm3/ : 303.0...313.0  
1000 s: (300.0...316.0)  
Spread cm3 : 10.00  
1000 s: (15.0)  
Aneroid pressure h: 1800  
Speed rpm : 1150  
Del.quantity cm3/ : 240.0...243.0 \*  
1000 s: (237.0...246.0)  
Spread cm3 : 10.00  
1000 s: (15.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 124.0...126.0  
1000 s: (121.0...129.0)  
Spread cm3 : 10.00  
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than  
  
full load rack tr: 13.30  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 330.0...350.0  
1000 s: (326.0...354.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 21,0 b2  
 Edition : 14.09.90  
 Replaces : 17.5.90  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 640 815  
  
 Injection pump  
 Pump designation : PE12P120A520LS7824  
 EP type number : 0 412 620 816  
 Governor  
 Governor design. : RGV300...1150PA902-4  
 Governor no. : 0 421 813 870

Customer-spec. information  
 Customer : MAN

Engine : D2842LYE

1st version kW : 735.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
  
 Overflow valve  
 : 1 417 413 025  
  
 Inlet press., bar : 1.50  
  
 Test nozzle holder  
 assembly : 1 688 901 019  
  
 Opening  
 pressure, bar : 207...210  
  
 Orifice plate  
 diameter mm : 0,8  
  
 Test lines : 1 680 750 067  
  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 : 180-225-240-285-300-  
 Phasing : 345  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1150  


---

 Rack travel in mm : 13.60...13.70  


---

 Del. quantity cm<sup>3</sup>/ : 30.1...30.3  
 100 s: (29.8...30.6)  


---

 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 500.0  
 Rack travel in mm : 9.1...9.3  
 Del. quantity cm<sup>3</sup>/ : 14.9...15.1  
 100 s: (14.6...15.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)  
 3rd speed rpm : 300  
 Rack travel in mm : 7.20...7.40  
 Del. quantity cm<sup>3</sup>/ : 5.2...6.0 \*  
 100 s: (-)  
 Spread cm<sup>3</sup> : -  
 100 s: (-)

(B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.60  
 2nd speed rpm : 450  
 travel mm : 2.90...3.50  
 3rd speed rpm : 750  
 travel mm : 5.60...6.00  
 4th speed rpm : 1150  
 travel mm : 9.50...9.70  
 5th speed rpm : 1400  
 travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1200  
Rack travel in mm : 15.20...17.80

#### FULL LOAD DELIV. AT FULL LOAD STOP

##### 1st version

Speed rpm : 1150  
Aneroid pressure h : 1300  
Del.quantity : 301.0...303.0  
1000 : (298.0...306.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

##### 1st version

Control Lever  
position degrees: 118...126

##### Testing:

1st rack travel in: 12.60  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1290...1320  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 79...87

##### Testing:

Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 300  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### Aneroid/Altitude Compensator Test

##### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 13.60...13.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 100  
Rack travel in m: 9.50...9.60  
3rd pressure hPa : 470  
Rack travel in m: 12.40...12.80

#### START CUT-OUT

J27

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0 \*  
1000 s: (-)

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (-)  
Rack travel in mm : 17.50

#### HIGH IDLE

##### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Rack travel in mm : <7.00  
Del.quantity cm<sup>3</sup>/ : - \*\*  
1000 s: (-)

##### 2nd version

Aneroid pressure h: -  
Speed rpm : 500  
Rack travel in mm : < 7.50  
Del.quantity cm<sup>3</sup>/ : < 50.0  
1000 s: (-)

##### 3rd version

Aneroid pressure h: -  
Speed rpm : 500  
Rack travel in mm : 8.40...8.60  
Del.quantity cm<sup>3</sup>/ : 125.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.20...7.40  
Del.quantity cm3/ : 52.0...60.0 \*  
1000 s: (-)

Remarks: : MAN-NR. 2-7960

\* applies to cylinders 4, 5, 6, 8 ,10  
and 12  
\*\* applies for cylinders 1, 2, 3, 7, 9  
and 11

APPLICATION

Ship



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 b1  
 Edition : 21.09.90  
 Replaces : 26.6.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 816  
 Injection pump  
 Pump designation : PE12P120A520LS7824  
 EP type number : 0 412 620 816  
 Governor  
 Governor design. : RQV250...1150PA902-3  
 Governor no. : 0 421 813 761

Customer-spec. information  
 Customer : MAN

Engine : D284<sup>3</sup> AE

1st version kW : 662.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 : 180-225-240-285-300-  
 Phasing : 345  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150  
 Rack travel in mm : 12.70...12.80  
 Del. quantity cm<sup>3</sup>/ : 24.9...25.1  
 100 s: (24.6...25.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 500.0  
 Rack travel in mm : 9.4...9.6  
 Del. quantity cm<sup>3</sup>/ : 14.9...15.1  
 100 s: (14.6...15.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)  
 3rd speed rpm : 250  
 Rack travel in mm : 7.30...7.50  
 Del. quantity cm<sup>3</sup>/ : 5.2...6.0 \*  
 100 s: (-)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 0.90...1.10  
 2nd speed rpm : 450  
 travel mm : 2.90...3.50  
 3rd speed rpm : 750  
 travel mm : 5.50...5.90  
 4th speed rpm : 1150  
 travel mm : 9.20...9.40  
 5th speed rpm : 1400  
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1225  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 1300  
Del.quantity : 249.0...251.0  
1000 : (246.0...254.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 117...125

Testing:

1st rack travel in: 11.70  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1275...1315  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 76...84

Testing:

Speed rpm : 100  
Minimum rack trave: 8.90  
Speed rpm : 250  
Rack travel in mm : 7.70...7.90  
Rack travel in mm : 2.00  
Speed rpm : 430...490

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.60  
2nd pressure hPa : 100  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 400  
Rack travel in m: 11.90...12.30

START CUT-OUT

Speed 1/min : 170 (190)

K02

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...120.0 \*  
1000 s: (-)

Speed rpm : 100  
Del.quantity cm3/ : - \*\*  
1000 s: (-)  
Rack travel in mm : 17.50

## HIGH IDLE

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Rack travel in mm : < 7.50  
Del.quantity cm3/ : - \*\*  
1000 s: (-)

2nd version

Speed rpm : 500  
Rack travel in mm : < 8.00  
Del.quantity cm3/ : < 50.0  
1000 s: (-)

3rd version

Speed rpm : 500  
Rack travel in mm : 8.60...8.80  
Del.quantity cm3/ : 125.0  
1000 s: (-)

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.30...7.50  
Del.quantity cm3/ : 52.0...60.0 \*  
1000 s: (-)

Remarks:

: MAN-NR. 2-7959

\* applies to cylinders 4, 5, 6, 8, 10  
and 12

\*\* applies for cylinders 1, 2, 3, 7, 9  
and 11

APPLICATION

Ship



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 c  
 Edition : 31.07.90  
 Replaces : 2.2.90  
 Test oil : ISO-4113

Combination no. : 0 402 640 817

Injection pump  
 Pump designation : PE12P120A520LS7826  
 EP type number : 0 412 620 817  
 Governor  
 Governor design. : RQV350...1150PA870-4  
 Governor no. : 0 421 813 717

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 19.00...21.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 15.20...15.30

Del. quantity cm<sup>3</sup>/ : 31.2...31.4

100 s: (30.9...31.7)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.3...5.9  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.30...1.80

2nd speed rpm : 600  
 travel mm : 3.30...3.80

3rd speed rpm : 960  
 travel mm : 5.30...5.80

4th speed rpm : 1206  
 travel mm : 7.90...8.40

5th speed rpm : 1291  
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1275  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h: 1800  
Del.quantity : 312.0...314.0  
1000 : (309.0...317.0)  
Spread cm3 : 6.00  
1000 : (10.00)

RATED SPEED

1st version

Control lever  
position degrees: 113...121

Testing:

1st rack travel in: 14.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 62...70

Testing:

Speed rpm : 250  
Minimum rack trave: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.20...8.50

Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 9.60...9.70  
2nd pressure hPa : 1100  
Rack travel in m: 13.80...14.10

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

K05

1st version

Aneroid pressure h: 1800  
Speed rpm : 750  
Del.quantity cm3/ : 303.0...313.0  
1000 s: (300.0...316.0)  
Spread cm3 : 10.00  
1000 s: (15.0)  
Aneroid pressure h: 1800  
Speed rpm : 1150  
Del.quantity cm3/ : 240.0...243.0 \*  
1000 s: (237.0...246.0)  
Spread cm3 : 10.00  
1000 s: (15.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 124.0...126.0  
1000 s: (121.0...129.0)  
Spread cm3 : 10.00  
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 330.0...350.0  
1000 s: (326.0...354.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 e1  
 Edition : 14.09.90  
 Replaces : 17.5.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 818  
 Injection pump  
 Pump designation : PE12P120A520LS7829  
 EP type number : 0 412 620 821  
 Governor  
 Governor design. : RGV300...1150PA943-1  
 Governor no. : 0 421 813 869

Customer-spec. information  
 Customer : MAN

Engine : D2842LZE

1st version kW : 809.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 : 180-225-240-285-300-  
 Phasing : 345  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150  
 Rack travel in mm : 13.80...13.90  
 Del.quantity cm<sup>3</sup>/ : 30.4...30.6  
 100 s : (30.1...30.9)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 500  
 Rack travel in mm : 9.10...9.30  
 Del.quantity cm<sup>3</sup>/ : 14.9...15.1  
 100 s : (14.6...15.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)  
 3rd speed rpm : 300  
 Rack travel in mm : 7.30...7.50  
 Del.quantity cm<sup>3</sup>/ : 5.2...6.0 \*  
 100 s : (-)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL  
 1st speed rpm : 300  
 travel mm : 1.20...1.60  
 2nd speed rpm : 450  
 travel mm : 2.90...3.50  
 3rd speed rpm : 750  
 travel mm : 5.70...6.10  
 4th speed rpm : 1150  
 travel mm : 9.50...9.70  
 5th speed rpm : 1400  
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION  
 Control-lever position  
 Degree: -1  
 Speed rpm : 1225  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150  
Aneroid pressure h : 1300  
Del.quantity : 304.0...306.0  
1000 : (301.0...309.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control Lever  
position degrees: 118...126

Testing:

1st rack travel in: 12.80  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever  
position degrees: 79...87

Testing:

Speed rpm : 100  
Minimum rack trave: 8.90  
Speed rpm : 300  
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 280...410

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 100  
Rack travel in m: 9.50...9.60  
3rd pressure hPa : 470  
Rack travel in m: 12.40...12.80

START CUT-OUT

K07

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.80  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0 \*  
1000 s: (-)

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : - \*\*  
1000 s: (-)  
Rack travel in mm : 17.50

HIGH IDLE

1st version

Speed rpm : 500  
Rack travel in mm : < 7.00  
Del.quantity cm<sup>3</sup>/ : - \*\*  
1000 s: (-)

2nd version

Speed rpm : 500  
Rack travel in mm : < 7.50  
Del.quantity cm<sup>3</sup>/ : < 50.0  
1000 s: (-)

3rd version

Speed rpm : 500  
Rack travel in mm : 8.50...8.70  
Del.quantity cm<sup>3</sup>/ : 125.0  
1000 s: (-)

Remarks:

: MAN-NR. 3-7023

\* applies to cylinders 4, 5, 6, 8, 10  
and 12

\*\* applies for cylinders 1, 2, 3, 7, 9

and 11

APPLICATION

Ship





## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB 21,9 x 2  
 Edition : 14.09.90  
 Replaces : 1.2.90  
 Test oil : ISO-4113  
  
 Combination no. : 0 402 640 819  
  
 Injection pump  
 Pump designation : PE12P120A320LS7807-3  
 EP type number : 0 412 620 822  
 Governor  
 Governor design. : RQV350...1050PA842-6  
 Governor no. : 0 421 813 853

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 444 A

1st version kW : 390.0  
 Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

### BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.50...13.70

Del. quantity cm<sup>3</sup>/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 0.70...1.20

2nd speed rpm : 600  
travel mm : 3.10...3.60

3rd speed rpm : 940  
travel mm : 5.20...5.70

4th speed rpm : 1105  
travel mm : 6.70...7.20

5th speed rpm : 1263  
travel mm : 9.80...10.30

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 660  
Del.quantity : 199.0...201.0  
1000 : (196.0...204.0)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 107...115

Testing:

1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 62...70

Testing:

Speed rpm : 250  
Minimum rack trave: 7.10  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 400...600

TORQUE CONTROL

Dimension a mm : 1.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.20...12.40  
2nd speed rpm : 975  
Rack travel in m: 12.60...12.80  
3rd speed rpm : 875  
Rack travel in m: 13.20...13.40  
4th speed rpm : 700  
Rack travel in m: 13.50...13.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 660  
Rack travel mm : 13.50...13.70

Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.30...11.50  
2nd pressure hPa : 500  
Rack travel in m: 12.80...13.00  
3rd pressure hPa : 830  
Rack travel in m: 13.70...13.80  
4th pressure hPa : 1150  
Rack travel in m: 13.70...13.90  
5th pressure hPa : -  
Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100  
Speed rpm : 1050  
Del.quantity cm3/ : 170.0...174.0  
1000 s: (167.0...177.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1100  
Speed rpm : 750  
Del.quantity cm3/ : 204.0...208.0  
1000 s: (201.0...211.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1100  
Speed rpm : 1050  
Del.quantity cm3/ : 150.0...154.0  
1000 s: (147.0...157.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 136.0...138.0  
1000 s: (133.0...141.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks: :



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 e  
 Edition : 20.07.90  
 Replaces : 17.5.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 820  
 Injection pump  
 Pump designation : PE12P120A320LS7814-2  
 EP type number : 0 412 620 824  
 Governor  
 Governor design. : RQ750PA966  
 Governor no. : 0 421 801 535

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 535.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
 : (4.75...4.95)  
 Rack travel in mm : 19.00...21.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.90...15.00

Del.quantity cm<sup>3</sup>/ : 31.6...31.8

100 s: (31.3...32.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.6...5.2

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 760

travel mm : 4.30...4.80

2nd speed rpm : 830

travel mm : 11.70...12.20

3rd speed rpm : 890

travel mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 316.0...318.0

1000 : (313.0...321.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 76...84

Testing:  
1st rack travel in: 13.90  
Speed rpm : 755...760  
2nd rack travel in: 4.00  
Speed rpm : 780...790  
4th rack travel in: ?  
Speed rpm : 0.00...1.00

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.90  
Speed rpm : 755...760

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 22,0 a 1  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 640 821

Injection pump  
 Pump designation : PE12P120A520LS7814  
 EP type number : 0 412 620 813  
 Governor  
 Governor design. : RQV350...1050PA870-9  
 Governor no. : 0 421 813 873

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 588.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
 : (4.75...4.95)  
 Rack travel in mm : 19.00...21.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

**BASIC SETTING**

1st speed rpm : 650

Rack travel in mm : 13.00...13.20

Del. quantity cm<sup>3</sup>/ : 26.2...26.5

100 s: (25.9...26.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.9

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 350  
 travel mm : 1.30...1.80

2nd speed rpm : 600  
 travel mm : 3.30...3.80

3rd speed rpm : 900  
 travel mm : 5.40...5.90

4th speed rpm : 1100  
 travel mm : 7.60...8.10

5th speed rpm : 1200  
 travel mm : 9.60...10.10

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650  
Aneroid pressure h : 1100  
Del.quantity : 262.0...265.0  
1000 : (259.0...268.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 113...121

Testing:

1st rack travel in: 11.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 62...70

Testing:

Speed rpm : 250  
Minimum rack trave: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

Speed rpm : 350...600

TORQUE CONTROL

Dimension a mm : 0.90  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 850  
Rack travel in m: 13.70...13.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 650  
Pressure hPa : 1100  
Rack travel mm : 13.00...13.20

Measurement

Speed 1/min : 650

1st pressure hPa : 500  
Rack travel in m: 9.50...9.70

K15

2nd pressure hPa : 700  
Rack travel in m: 11.10...11.30  
3rd pressure hPa : 1400  
Rack travel in m: 13.20...13.30  
4th pressure hPa : 1500  
Rack travel in m: 13.40...13.60  
5th pressure hPa : -  
Rack travel in m: 8.20...8.50

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 261.0...264.0  
1000 s: (258.0...267.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1850  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 278.0...282.0  
1000 s: (275.0...285.0)  
Spread cm<sup>3</sup> : -  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 130.0...132.0  
1000 s: (127.0...135.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 22,0 e 1  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 640 822

Injection pump  
 Pump designation : PE12P120A320LS7814-2  
 EP type number : 0 412 620 824  
 Governor  
 Governor design. : RQ750PA966-1  
 Governor no. : 0 421 801 550

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 539.0  
 Rated speed : 1500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
 : (4.75...4.95)  
 Rack travel in mm : 19.00...21.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

**BASIC SETTING**

1st speed rpm : 850

Rack travel in mm : 14.50...14.60

Del.quantity cm<sup>3</sup>/ : 29.4...29.6

100 s: (29.1...29.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.6...5.2  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 935  
 travel mm : 4.60...5.10  
 2nd speed rpm : 1070  
 travel mm : 13.70...14.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 850  
 Del.quantity : 294.0...296.0  
 1000 : (291.0...299.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version



Control lever  
position degrees: 77...85

Testing:  
1st rack travel in: 13.50  
Speed rpm : 905...910  
2nd rack travel in: 4.00  
Speed rpm : 940...950  
4th rack travel in: 1000  
Speed rpm : 0.00...1.00

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 905...910

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 u 1  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 823  
 Injection pump  
 Pump designation : PE12P120A320LS7805  
 EP type number : 0 412 620 802  
 Governor  
 Governor design. : RQV350...1050PA781-1  
 Governor no. : 0 421 813 890

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 485.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...160

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.90...14.00

Del. quantity cm<sup>3</sup>/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.40...1.90

2nd speed rpm : 481  
 travel mm : 3.00...3.50

3rd speed rpm : 1107  
 travel mm : 7.40...7.90

4th speed rpm : 1420  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h: 1100  
Del.quantity : 211.0...213.0  
1000 : (208.0...216.0)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 94...102

Testing:

1st rack travel in: 12.90  
Speed rpm : 1090...1110  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 44...52

Testing:

Speed rpm : 250  
Minimum rack trave: 6.80  
Speed rpm : 350  
Rack travel in mm : 5.20...5.80

CONSTANT REGULATION

Speed rpm : 400...600

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.00...11.30

Measurement

Speed 1/min : 500

1st pressure hPa : 350  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 500  
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100  
Speed rpm : 600  
Del.quantity cm3/ : 205.0...209.0  
1000 s: (202.0...212.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 141.0...143.0  
1000 s: (138.0...146.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90  
Speed rpm : 1090...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 16,0 c1  
 Edition : 31.08.90  
 Replaces : 16.2.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 877  
 Injection pump  
 Pump designation : PE6P130A72ORS7122-1  
 EP type number : 0 412 636 812  
 Governor  
 Governor design. : RQV225...930PA922  
 Governor no. : 0 421 813 763

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD162 FL,FJ,

1st version kW : 331.0  
 Rated speed : 1860

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 13.50...13.60  
 Del.quantity cm3/ : 30.0...30.3  
 100 s: (29.7...30.7)  
 Spread cm3 : 0.6  
 100 s: (1.0)

2nd speed rpm : 250.0  
 Rack travel in mm : 4.9...5.1  
 Del.quantity cm3/ : 2.5...3.0  
 100 s: (2.3...3.3)  
 Spread cm3 : 0.5  
 100 s: (0.8)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 2.10...2.70  
 3rd speed rpm : 700  
 travel mm : 5.60...6.20  
 4th speed rpm : 975  
 travel mm : 8.20...8.40  
 5th speed rpm : 1090  
 travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1100  
 Rack travel in mm : 7.70...10.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1200

Del.quantity : 300.5...303.5  
1000 : (297.0...307.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.50  
Speed rpm : 970...980  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 250  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 250...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.50...13.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 110  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 720  
Rack travel in m: 12.80...13.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 180.0...183.0  
1000 s: (176.5...183.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.50  
Speed rpm : 970...980

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...140.0  
1000 s: (116.0...144.0)  
Rack travel in mm : 9.50...9.70

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 25.5...30.5  
1000 s: (23.0...33.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (8.00)

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 k6  
 Edition : 03.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 894  
 Injection pump  
 Pump designation : PE6P120A32ORS7194  
 EP type number : 0 412 626 834  
 Governor  
 Governor design. : RQ250/1000PA936  
 Governor no. : 0 421 801 507

Customer-spec. information  
 Customer : DAF

Engine : WS 295

1st version kW : 295.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850  
 Rack travel in mm : 13.70...13.80  
 Del.quantity cm3/ : 24.5...24.7  
 100 s: (24.2...25.0)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 7.6...8.0  
 Del.quantity cm3/ : 1.4...2.0  
 100 s: (1.1...2.3)  
 Spread cm3 : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 550  
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 1000  
 Del.quantity : 245.0...247.0  
 1000 : (242.0...250.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 550  
 Rack travel in mm : 15.8

Testing:  
 1st rack travel in: 12.70

Speed rpm : 1035...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 250  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 345...385

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 1000  
Rack travel in m: 13.90...14.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.70...13.80

#### Measurement

Speed 1/min : 600  
1st pressure hPa : -  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 460  
Rack travel in m: 13.00...13.10  
3rd pressure hPa : 310  
Rack travel in m: 12.00...12.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 171.0...173.0  
1000 s: (168.0...176.0)

#### BREAKAWAY

#### 1st version

K23

1mm rack travel less than  
full load rack tr: 12.70  
Speed rpm : 1035...1050

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.60...6.80

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 t 4  
 Edition : 05.10.90  
 Replaces : 5.1.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 897  
 Injection pump  
 Pump designation : PE6P120A32OLS7808  
 EP type number : 0 412 626 816  
 Governor  
 Governor design. : RQ300/950PA762-10  
 Governor no. : 0 421 801 511

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 249.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600  
 Rack travel in mm : 13.90...14.10  
 Del. quantity cm<sup>3</sup>/ : 21.4...21.6  
 100 s: (21.1...21.9)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.7...6.0  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 900  
 Del. quantity : 214.0...216.0  
 100l : (211.0...219.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0



Testing:  
1st rack travel in: 13.80  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 550  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 1100  
Rack travel in m: 14.10...14.20  
4th pressure hPa : 1200  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 9.50...9.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1350  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 241.0...243.0  
1000 s: (238.0...246.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1350  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 237.0...241.0  
1000 s: (234.0...244.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 990...1005

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 205.0...225.0  
1000 s: (201.0...229.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 11,0 t 5  
 Edition : 05.10.90  
 Replaces : 23.3.90  
 Test oil : ISO-4113

Combination no. : 0 402 646 901

Injection pump  
 Pump designation : PE6P120A320LS7808  
 EP type number : 0 412 626 816  
 Governor  
 Governor design. : RQV300...950PA797-12  
 Governor no. : 0 421 813 840

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 249.0  
 Rated speed : 1900

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm<sup>3</sup>/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.10...1.40

2nd speed rpm : 620  
 travel mm : 5.00...5.40

3rd speed rpm : 780  
 travel mm : 6.00...6.50

4th speed rpm : 1010  
 travel mm : 8.30...8.80

5th speed rpm : 1100  
 travel mm : 9.80...10.30

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1

Speed rpm : 1040  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 214.0...216.0  
1000 : (211.0...219.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

#### Testing:

1st rack travel in: 13.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 80...88

#### Testing:

Speed rpm : 200  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00

#### CONSTANT REGULATION

Speed rpm : 300...500

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 550  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 1100  
Rack travel in m: 14.10...14.20  
4th pressure hPa : 1200  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 9.50...9.80

#### START CUT-OUT

K27

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1350  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 241.0...243.0  
1000 s: (238.0...246.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1350  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 237.0...241.0  
1000 s: (234.0...244.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 205.0...225.0  
1000 s: (201.0...229.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 13,8 w  
 Edition : 21.09.90  
 Replaces : 6.7.90  
 Test oil : ISO-4113

Combination no. : 0 402 646 902

Injection pump  
 Pump designation : PE6P130A72ORS7197  
 EP type number : 0 412 636 815  
 Governor  
 Governor design. : RQV300...900PA946  
 Governor no. : 0 421 813 845

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8210.42.151

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm<sup>3</sup>/ : 25.5...25.8

100 s: (25.1...26.1)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.1...5.5  
 Del.quantity cm<sup>3</sup>/ : 1.9...2.5  
 100 s: (1.5...2.9)  
 Spread cm<sup>3</sup> : 1.0  
 100 s: (1.4)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.40  
 2nd speed rpm : 450  
 travel mm : 2.80...3.40  
 3rd speed rpm : 700  
 travel mm : 5.50...5.90  
 4th speed rpm : 900  
 travel mm : 7.70...7.90  
 5th speed rpm : 1200  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 935  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Aneroid pressure h: 900  
 Del.quantity : 255.0...258.0  
 1000 : (251.5...261.5)

Spread cm3 : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 118...126

Testing:  
1st rack travel in: 12.50  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1020...1050  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 76...84

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40

#### CONSTANT REGULATION

Speed rpm : 320...440

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.40...13.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 345  
Rack travel in m: 12.70...12.80  
3rd pressure hPa : 275  
Rack travel in m: 11.10...11.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 500  
Del.quantity cm3/ : 269.0...276.0  
1000 s: (269.0...276.0)  
Aneroid pressure h: -  
Speed rpm : 500

LQ1

Del.quantity cm3/ : 181.0...184.0  
1000 s: (177.5...187.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 940...950

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...270.0  
1000 s: (236.0...274.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.10...5.50  
Del.quantity cm3/ : 19.0...25.0  
1000 s: (15.0...29.0)  
Spread cm3 : 10.00  
1000 s: (14.00)

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 t 7  
 Edition : 05.10.90  
 Replaces : 6.4.90  
 Test oil : ISO-4113

Combination no. : 0 402 646 908

Injection pump  
 Pump designation : PE6P120A320LS7808  
 EP type number : 0 412 626 816  
 Governor  
 Governor design. : RQ300/950PA932-3  
 Governor no. : 0 421 801 528

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kw : 249.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

---

Rack travel in mm : 13.90...14.10

---

Del. quantity cm<sup>3</sup>/ : 21.4...21.6  
 100 s: (21.1...21.9)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.7...6.0  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Anemid pressure h: 900  
 Del. quantity : 214.0...216.0  
 1000 : (211.0...219.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.80  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.8

Testing:

Speed rpm : 200  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 550  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 1100  
Rack travel in m: 14.10...14.20  
4th pressure hPa : 1200  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1350  
Speed rpm : 950  
Del.quantity cm3/ : 241.0...243.0  
1000 s: (238.0...246.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1350  
Speed rpm : 800  
Del.quantity cm3/ : 237.0...241.0  
1000 s: (234.0...244.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (201.0...229.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 L  
 Edition : 20.07.90  
 Replaces : 6.7.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 912  
 Injection pump  
 Pump designation : PE6P120A320RS7218  
 EP type number : 0 412 626 839  
 Governor  
 Governor design. : RQ250/1000PA936-1  
 Governor no. : 0 421 801 508

Customer-spec. information  
 Customer : DAF

Engine : WS 268  
 1st version kW : 268.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 075  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
 : (5.25...5.45)  
 Rack travel in mm : 14.50...15.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1  
 BEGINNING OF DELIVERY DIFFERENCE  
 betw. rack trav. m: 4.90...5.10  
 & maximum rack tra: 14.5...15.5  
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850  
 Rack travel in mm : 15.00...15.10  
 Del.quantity cm3/ : 23.7...23.9  
 100 s: (23.4...24.2)  
 Spread cm3 : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 250.0  
 Rack travel in mm : 6.4...6.8  
 Del.quantity cm3/ : 1.4...2.0  
 100 s: (1.1...2.3)  
 Spread cm3 : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 550  
 Rack travel in mm : 15.80...17.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 1000  
 Del.quantity : 237.0...239.0  
 1000 : (234.0...242.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

RATED SPEED

1st version



Setting point:  
Speed rpm : 550  
Rack travel in mm : 16.4

Testing:  
1st rack travel in: 14.00  
Speed rpm : 1035...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...2.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 310...350

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 15.30...15.40  
2nd speed rpm : 1000  
Rack travel in m: 15.20...15.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 15.00...15.10

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 480  
Rack travel in m: 14.20...14.30  
3rd pressure hPa : 330  
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 166.0...170.0  
1000 s: (164.0...172.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.00  
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.90...5.10

Remarks:

:  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 g
Edition : 17.09.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 914
Injection pump
Pump designation : PE6P130A720RS7197
EP type number : 0 412 636 815
Governor
Governor design. : RQ300/900PA968
Governor no. : 0 421 801 540

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8210.42.153

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder assembly : 1 688 901 105
Opening pressure, bar : 207...210
Orifice plate diameter mm : 0,8
Test lines : 1 680 750 015
Outside diameter x Wall thickness x Length mm : 6.00X1.50X600
(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

L06

Firing order : 1- 5- 3- 6- 2- 4
Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900
Rack travel in mm : 13.50...13.60
Del.quantity cm3/ : 25.5...25.8
100 s: (25.1...26.1)
Spread cm3 : 0.6
100 s: (1.0)
2nd speed rpm : 300.0
Rack travel in mm : 5.1...5.5
Del.quantity cm3/ : 1.9...2.5
100 s: (1.5...2.7)
Spread cm3 : 1.0
100 s: (1.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 900
Del.quantity : 255.0...258.0
1000 : (251.5...261.5)
Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 20.0
Testing:
1st rack travel in: 12.50
Speed rpm : 945...960
2nd rack travel in: 4.00
Speed rpm : 1070...1100

4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.50...13.60  
2nd speed rpm : 600  
Rack travel in m: 13.50...13.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.50...13.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 345  
Rack travel in m: 12.70...12.80  
3rd pressure hPa : 275  
Rack travel in m: 11.10...11.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 269.0...276.0  
1000 s: (269.0...276.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 181.0...184.0  
1000 s: (177.5...187.5)

#### BREAKAWAY

L07

1st version  
1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 945...960

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.10...5.50  
Del.quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (15.0...29.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (14.00)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

#### APPLICATION

Omnibus

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 14,7 a 1  
 Edition : 31.08.90  
 Replaces : 15.3.90  
 Test oil : ISO-4113

Combination no. : 0 402 648 812

Injection pump  
 Pump designation : PE8P120A320LS7801  
 EP type number : 0 412 628 806  
 Governor  
 Governor design. : RQ300/1050PA717  
 Governor no. : 0 421 801 258

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm<sup>3</sup>/ : 22.1...22.3

100 s: (21.8...22.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.7

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.8)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del.quantity : 221.0...223.0

1000 : (218.0...226.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.00)

**RATED SPEED**

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.40  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:

Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.10...6.70  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 850  
Rack travel in m: 15.80...16.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600  
1st pressure hPa : 310  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 470  
Rack travel in m: 13.70...13.90  
3rd pressure hPa : 820  
Rack travel in m: 14.90...15.00  
4th pressure hPa : 950  
Rack travel in m: 15.60...15.90  
5th pressure hPa : -  
Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1150  
Speed rpm : 1050  
Del.quantity cm3/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: 1150  
Speed rpm : 850  
Del.quantity cm3/ : 246.0...250.0  
1000 s: (243.0...253.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 148.0...150.0  
1000 s: (145.0...153.0)  
Spread cm3 : 7.00  
1000 s: (10.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 14.40  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 b  
 Edition : 31.08.90  
 Replaces : 25.3.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 824  
 Injection pump  
 Pump designation : PE8P120A320LS7801  
 EP type number : 0 412 628 806  
 Governor  
 Governor design. : RQV300...1050PA797  
 Governor no. : 0 421 813 532

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Overflow  
 quantity min. 1/h: 100...120  
 Test nozzle holder  
 assembly : 1 688 901 105  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 075  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600  
 Rack travel in mm : 14.70...14.90  
 Del.quantity cm<sup>3</sup>/ : 22.1...22.3  
 100 s: (21.8...22.6)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 6.2...6.6  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.8)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL  
 1st speed rpm : 300  
 travel mm : 1.20...1.40  
 2nd speed rpm : 600  
 travel mm : 4.90...5.10  
 3rd speed rpm : 1075  
 travel mm : 7.40...7.60  
 4th speed rpm : 1100  
 travel mm : 8.00...8.20  
 5th speed rpm : 1150  
 travel mm : 9.00...9.20

GUIDE SLEEVE POSITION  
 Control-lever position  
 Degree: -1  
 Speed rpm : 1125  
 Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h : 680  
Del.quantity : 221.0...223.0  
1000 : (218.0...226.0)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

#### Testing:

1st rack travel in: 14.20  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 82...90

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.90  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

#### CONSTANT REGULATION

Speed rpm : 300...500

#### TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 850  
Rack travel in m: 15.80...16.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.70...14.90

#### Measurement

Speed 1/min : 600

1st pressure hPa : 310  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 470  
Rack travel in m: 13.70...13.90

3rd pressure hPa : 820  
Rack travel in m: 14.90...15.00  
4th pressure hPa : 1100  
Rack travel in m: 15.90...16.00  
5th pressure hPa : -  
Rack travel in m: 11.40...11.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1150  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)  
Aneroid pressure h: 1150  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 246.0...250.0  
1000 s: (243.0...253.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 148.0...150.0  
1000 s: (145.0...153.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack travel: 14.20  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 e 2  
 Edition : 31.07.90  
 Replaces : 8.6.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 831  
 Injection pump  
 Pump designation : PE8P120A320LS7801-1  
 EP type number : 0 412 628 818  
 Governor  
 Governor design. : RQV350...1050PA842-7  
 Governor no. : 0 421 813 874

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm<sup>3</sup>/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 0.80...1.20

2nd speed rpm : 510  
 travel mm : 3.60...4.10

3rd speed rpm : 1100  
 travel mm : 7.80...8.40

4th speed rpm : 1270  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version



Speed rpm : 600  
Aneroid pressure h : 750  
Del.quantity : 212.0...214.0  
1000 : (209.0...217.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 64...72

#### Testing:

1st rack travel in: 14.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.40  
Speed rpm : 350  
Rack travel in mm : 5.50...6.10

#### CONSTANT REGULATION

Speed rpm : 350...550

#### TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 975  
Rack travel in m: 15.60...15.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 14.50...14.70

#### Measurement

Speed 1/min : 600

1st pressure hPa : 400  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 550  
Rack travel in m: 13.60...13.80  
3rd pressure hPa : 900  
Rack travel in m: 14.70...14.80

4th pressure hPa : 1250  
Rack travel in m: 15.50...15.70  
5th pressure hPa : -  
Rack travel in m: 11.20...11.40

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1250  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 227.0...230.0  
1000 s: (224.0...233.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1250  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 238.0...242.0  
1000 s: (235.0...245.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1250  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 156.0...159.0 \*  
1000 s: (153.0...162.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 150.0...152.0  
1000 s: (147.0...155.0)

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 14.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

\* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a 8  
 Edition : 20.07.90  
 Replaces : 1.2.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 841  
 Injection pump  
 Pump designation : PE8P12DA320LS7801-1  
 EP type number : 0 412 628 818  
 Governor  
 Governor design. : RQ300/1050PA762-5  
 Governor no. : 0 421 801 399

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A  
 1st version kW : 260.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Overflow  
 quantity min. 1/h: 100...120  
 Test nozzle holder  
 assembly : 1 688 901 105  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 075  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8-7-2-6-3-5-4-1

Phasing : 0-45-90-135-180-225-270-315  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500  
 Rack travel in mm : 14.00...14.20  
 Del.quantity cm<sup>3</sup>/ : 20.4...20.6  
 100 s: (20.1...20.9)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)  
 2nd speed rpm : 300.0  
 Rack travel in mm : 6.0...6.6  
 Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 500  
 Aneroid pressure h: 650  
 Del.quantity : 204.0...206.0  
 1000 : (201.0...209.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.00)

RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75  
2nd speed rpm : 1050  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 850  
Rack travel in m: 13.70...14.00  
4th speed rpm : 700  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600  
1st pressure hPa : 300  
Rack travel in m: 12.30...12.50  
2nd pressure hPa : 400  
Rack travel in m: 13.30...13.60  
3rd pressure hPa : 850  
Rack travel in m: 14.60...14.70 \*  
4th pressure hPa : -  
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050  
Speed rpm : 1050  
Del.quantity cm3/ : 178.0...181.0  
1000 s: (175.0...184.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: 1050  
Speed rpm : 700  
Del.quantity cm3/ : 213.0...217.0  
1000 s: (210.0...220.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: 1050  
Speed rpm : 850  
Del.quantity cm3/ : 202.0...206.0  
1000 s: (199.0...209.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm3 : 7.00  
1000 s: (10.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 q  
 Edition : 31.07.90  
 Replaces : 5.1.90  
 Test oil : ISO-4113

Combination no. : 0 402 648 864

Injection pump  
 Pump designation : PE8P120A320LS7816  
 EP type number : 0 412 628 829  
 Governor  
 Governor design. : RQ300/950PA762-7  
 Governor no. : 0 421 801 480

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del.quantity cm<sup>3</sup>/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 254.0...256.0

1000 : (251.0...259.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.20  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90  
2nd speed rpm : 950  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 800  
Rack travel in m: 15.50...15.70

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600  
1st pressure hPa : 350  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 700  
Rack travel in m: 14.10...14.30  
3rd pressure hPa : 1200  
Rack travel in m: 14.80...15.00  
4th pressure hPa : 1500  
Rack travel in m: 15.40...15.60  
5th pressure hPa : -  
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600  
Speed rpm : 950  
Del.quantity cm3/ : 270.0...273.0  
1000 s: (267.0...276.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm3/ : 270.0...274.0  
1000 s: (267.0...277.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 14.20  
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 k 1  
 Edition : 31.07.90  
 Replaces : 6.7.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 881  
 Injection pump  
 Pump designation : PE8P120A320LS7816  
 EP type number : 0 412 628 829  
 Governor  
 Governor design. : RQV300...950PA797-13  
 Governor no. : 0 421 813 841

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del. quantity cm<sup>3</sup>/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.40

2nd speed rpm : 700  
 travel mm : 5.50...6.00

3rd speed rpm : 1100  
 travel mm : 8.30...8.80

4th speed rpm : 1090  
 travel mm : 9.70...10.20

5th speed rpm : 1190  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 16.20...18.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h : 1000  
Del.quantity : 254.0...256.0  
1000 : (251.0...259.0)  
Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 120...128

#### Testing:

1st rack travel in: 14.20  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 82...90

#### Testing:

Speed rpm : 200  
Minimum rack trave: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50

#### CONSTANT REGULATION

Speed rpm : 300...500

#### TORQUE CONTROL

Dimension a mm : 0.30  
2nd speed rpm : 950  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 800  
Rack travel in m: 15.50...15.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.60...14.80

#### Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 12.00...12.20  
2nd pressure hPa : 700  
Rack travel in m: 13.80...14.00

3rd pressure hPa : 1200  
Rack travel in m: 14.80...15.00  
4th pressure hPa : -  
Rack travel in m: 10.20...10.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1600  
Speed rpm : 950  
Del.quantity cm3/ : 270.0...273.0  
1000 s: (267.0...276.0)  
Spread cm3 : 8.00  
1000 s: (12.)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm3/ : 270.0...274.0  
1000 s: (267.0...277.0)  
Spread cm3 : 8.00  
1000 s: (12.00)  
Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 14.20  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MTU 14,6 a1  
 Edition : 31.07.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 884  
 Injection pump  
 Pump designation : PE8P120A320LS7830  
 EP type number : 0 412 628 844  
 Governor  
 Governor design. : RQV350...1150PA870-  
 10  
 Governor no. : 0 421 815 879

Customer-spec. information  
 Customer : MTU

Engine : 8V 183 TE92

1st version kW : 490.0  
 Rated speed : 2300

TEST BENCH REQUIREMENT

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 19.50...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.80...14.90

Del. quantity cm<sup>3</sup>/ : 31.1...31.3

100 s: (30.8...31.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.6

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.90...2.40

2nd speed rpm : 500  
 travel mm : 3.00...3.50

3rd speed rpm : 800  
 travel mm : 4.30...4.80

4th speed rpm : 1200  
 travel mm : 8.30...8.90

5th speed rpm : 1250  
 travel mm : 9.30...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80



FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Aneroid pressure h: 2000  
Del.quantity : 311.0...313.0  
1000 : (308.0...316.0)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 113...121

Testing:  
1st rack travel in: 13.80  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 62...70

Testing:  
Speed rpm : 250  
Minimum rack trave: 7.00  
Speed rpm : 350  
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 7.10...7.30

Measurement  
Speed 1/min : 500

1st pressure hPa : 400  
Rack travel in m: 8.30...8.40  
2nd pressure hPa : 1200  
Rack travel in m: 12.50...12.80

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 2000  
Speed rpm : 750  
Del.quantity cm3/ : 303.0...313.0  
1000 s: (300.0...316.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 2000  
Speed rpm : 1150  
Del.quantity cm3/ : 240.0...243.0 \*  
1000 s: (237.0...246.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 120.0...122.0  
1000 s: (117.0...125.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.80  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 320.0...340.0  
1000 s: (316.0...344.0)

Remarks:

:

\* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a23  
 Edition : 14.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 892  
 Injection pump  
 Pump designation : PE8P120A320LS7801-1  
 EP type number : 0 412 628 818  
 Governor  
 Governor design. : RQV350...950PA866-7  
 Governor no. : 0 421 813 882

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 266.0  
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del. quantity cm<sup>3</sup>/ : 20.0...20.2

100 s: (19.7...20.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.30...1.80

2nd speed rpm : 424  
 travel mm : 2.30...2.80

3rd speed rpm : 700  
 travel mm : 4.10...4.60

4th speed rpm : 1008  
 travel mm : 7.90...8.40

5th speed rpm : 1220  
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1025

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 650  
Del.quantity : 200.0...202.0  
1000 : (197.0...205.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

#### Testing:

1st rack travel in: 12.20  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1075...1105  
4th rack travel in: 1150  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 81...89

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.40  
Speed rpm : 350  
Rack travel in mm : 5.50...6.10

#### CONSTANT REGULATION

Speed rpm : 350...550

#### TORQUE CONTROL

Dimension a mm : 1.10  
2nd speed rpm : 950  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 900  
Rack travel in m: 13.50...13.60  
4th speed rpm : 800  
Rack travel in m: 14.30...14.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.00...14.20

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.30...12.50

2nd pressure hPa : 375  
Rack travel in m: 13.40...13.60  
3rd pressure hPa : 900  
Rack travel in m: 14.10...14.20 \*

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1100  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 190.0...193.0  
1000 s: (187.0...196.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1100  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 213.0...217.0  
1000 s: (210.0...220.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1100  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 163.0...165.0 \*  
1000 s: (160.0...168.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 147.0...149.0  
1000 s: (144.0...152.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

\* = Set at reduced-delivery stop.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 j  
Edition : 20.07.90  
Replaces : 19.6.90  
Test oil : ISO-4113

Combination no. : 0 402 649 811

Injection pump  
Pump designation : PE10P120A520LS7831  
EP type number : 0 412 629 806  
Governor  
Governor design. : RQ300/950PA950  
Governor no. : 0 421 801 520

Customer-spec. information  
Customer : MAN

Engine : D 2840 LF

1st version kw : 368.0  
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
In n. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
                  : (4.95...5.15)  
Rack travel in mm : 13.00...14.00  
Firing order : 10- 9- 4- 1- 8- 7  
                  - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
                  216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 22.9...23.1

100 s : (22.6...23.4)

Spread cm3 : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.4

Del.quantity cm3/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm3 : 0.8

100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50  
Speed rpm : 995...1010  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 370...410

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 600  
Rack travel in m: 13.70...13.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.50...13.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 200  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 500  
Rack travel in m: 12.80...13.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 225.0...231.0  
1000 s: (222.0...234.0)  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 122.0...130.0  
1000 s: (119.0...133.0)  
Spread cm<sup>3</sup> : 12.00  
1000 s: (16.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 151.0...153.0  
1000 s: (148.0...156.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 995...1010

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...190.0  
1000 s: (166.0...194.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.40  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 3-7014  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 10  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 c  
 Edition : 31.07.90  
 Replaces : 6.7.90  
 Test oil : ISO-4113

Combination no. : 0 402 735 800

Injection pump  
 Pump designation : PES5P120A720/3LS7210  
 EP type number : 0 412 725 808  
 Governor  
 Governor design. : RQV325...1000PA962K  
 Governor no. : 0 421 815 246

Customer-spec. information  
 Customer : MAN

Engine : D2865LF03

1st version kW : 235.0  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
 : (4.75...4.95)  
 Rack travel in mm : 15.00...16.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60  
 & maximum rack tra: 15.0...16.0  
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

---

Rack travel in mm : 13.10...13.20

---

Del. quantity cm<sup>3</sup>/ : 25.7...25.9  
 100 s: (25.4...26.2)

---

Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

---

2nd speed rpm : 325.0  
 Rack travel in mm : 5.9...6.3  
 Del. quantity cm<sup>3</sup>/ : 4.7...5.3  
 100 s: (4.4...5.6)

---

Spread cm<sup>3</sup> : 1.0  
 100 s: (1.4)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
 travel mm : 7.70...7.90  
 2nd speed rpm : 325  
 travel mm : 2.10...2.30  
 3rd speed rpm : 500  
 travel mm : 4.10...4.50  
 4th speed rpm : 900  
 travel mm : 6.40...6.80  
 5th speed rpm : 1350  
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1140  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Aneroid pressure h: 1200  
Del.quantity : 257.0...259.0  
1000 : (254.0...262.0)  
Spread cm3 : 6.00  
1000 : (10.00)

RATED SPEED

1st version  
Control lever  
position degrees: 283...291

Testing:  
1st rack travel in: 11.70  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 240...248

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 325  
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION  
Speed rpm : 340...450

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 1000  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 650  
Rack travel in m: 12.40...12.60  
4th speed rpm : 400  
Rack travel in m: 11.60...11.90

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 13.10...13.20

Measurement  
Speed 1/min : 900

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 170  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 600  
Rack travel in m: 11.90...12.10

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1000  
Del.quantity cm3/ : 238.0...242.0  
1000 s: (235.0...245.0)  
Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm3/ : 259.0...265.0  
1000 s: (256.0...268.0)  
Speed rpm : 650  
Del.quantity cm3/ : 90.0...100.0  
1000 s: (87.0...103.0)  
Spread cm3 : 10.00  
1000 s: (14.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 154.0...156.0  
1000 s: (151.0...159.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...200.0  
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 5.90...6.30  
Del.quantity cm3/ : 47.0...53.0  
1000 s: (44.0...56.0)  
Spread cm3 : 10.00  
1000 s: (14.00)



Remarks:

: MAN-NR. 3-7048

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 5  
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 t  
 Edition : 16.08.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 805  
 Injection pump  
 Pump designation : PES6P120A12ORS7206  
 EP type number : 0 412 726 835  
 Governor  
 Governor design. : RGV350..1100PA924-5K  
 Governor no. : 0 421 815 250

Customer-spec. information  
 Customer : CUMMINS

Engine : 6CTAA

1st version kW : 202.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 047

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 17...19

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 12.60...12.70  
 Del.quantity cm<sup>3</sup>/ : 15.8...16.0  
 100 s: (15.5...16.3)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.7...5.9  
 Del.quantity cm<sup>3</sup>/ : 2.3...2.9  
 100 s: (2.1...3.1)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.10...1.50  
 2nd speed rpm : 550  
 travel mm : 3.40...4.00  
 3rd speed rpm : 900  
 travel mm : 6.10...6.70  
 4th speed rpm : 1150  
 travel mm : 8.40...8.60  
 5th speed rpm : 1250  
 travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1280  
 Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 1200

Del.quantity : 158.0...160.0  
1000 : (155.0...163.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 111...119

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 71...79

Testing:  
Speed rpm : 250  
Minimum rack travel: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION  
Speed rpm : 350...550

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 600  
Rack travel in m: 11.60...11.80  
3rd speed rpm : 800  
Rack travel in m: 12.20...12.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1100  
Pressure hPa : 1200  
Rack travel mm : 12.60...12.70

Measurement  
Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 8.40...8.60  
2nd pressure hPa : 600  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 300

MO3

Rack travel in m: 9.20...9.60

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm3/ : 174.0...180.0  
1000 s: (171.0...183.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 105.0...109.0  
1000 s: (103.0...111.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 235.0...255.0  
1000 s: (231.0...259.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del.quantity cm3/ : 23.0...29.0  
1000 s: (21.0...31.0)  
Spread cm3 : 5.00  
1000 s: (9.00)

#### Remarks:

: C.D.C. # 3281182  
Start-of delivery mark/lock = 7.5°  
angular displacement of the cam after  
start of delivery of cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 w  
 Edition : 08.08.90  
 Replaces : 8.6.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 806  
 Injection pump  
 Pump designation : PES6P110A120RS7213  
 EP type number : 0 412 716 804  
 Governor  
 Governor design. : RQV400...1250PA964-K  
 Governor no. : 0 421 815 252

Customer-spec. information  
 Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 171.5  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 115...125

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 15.50...15.60

Del. quantity cm<sup>3</sup>/ : 16.5...16.7

100 s: (16.3...16.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 3.3...3.7

100 s: (3.1...3.9)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 0.70...1.10

2nd speed rpm : 400  
 travel mm : 1.40...1.60

3rd speed rpm : 600  
 travel mm : 2.90...3.30

4th speed rpm : 1300  
 travel mm : 7.20...7.40

5th speed rpm : 1500  
 travel mm : 9.10...9.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Aneroid pressure h: 1200  
 Del. quantity : 165.5...167.5  
 1000 : (163.5...169.5)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 14.50  
Speed rpm : 1295...1305  
2nd rack travel in: 4.00  
Speed rpm : 1475...1505  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 400  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 15.50...15.60  
2nd speed rpm : 800  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 700  
Rack travel in m: 13.80...14.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1250  
Pressure hPa : 1200  
Rack travel mm : 15.50...15.60

Measurement  
Speed 1/min : 1250

1st pressure hPa : -  
Rack travel in m: 7.60...8.00  
2nd pressure hPa : 400  
Rack travel in m: 9.70...9.80  
3rd pressure hPa : 800  
Rack travel in m: 13.40...13.80

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 177.0...181.0  
1000 s: (175.0...183.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 82.5...86.5  
1000 s: (80.5...88.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.50  
Speed rpm : 1295...1305

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 12.00...13.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Del. quantity cm<sup>3</sup>/ : 33.0...37.0  
1000 s: (31.0...39.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: C.D.C. # 3913440  
Start-of-delivery mark 6° cam angle  
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r  
 Edition : 05.10.90  
 Replaces : 8.6.90  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 807  
 Injection pump  
 Pump designation : PES6P110A12ORS7214  
 EP type number : 0 412 716 805  
 Governor  
 Governor design. : RQV350...1100PA964-1  
 K  
 Governor no. : 0 421 815 253

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 201.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 115...125

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.70...15.80

Del.quantity cm<sup>3</sup>/ : 20.6...20.8

100 s: (20.4...21.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 2.8...3.2

100 s: (2.6...3.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.00

2nd speed rpm : 450

travel mm : 3.10...3.50

3rd speed rpm : 600

travel mm : 5.10...5.50

4th speed rpm : 1000

travel mm : 8.10...8.30

5th speed rpm : 1200

travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del.quantity : 206.0...208.0

1000 : (204.0...210.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 14.40  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 15.70...15.80  
2nd speed rpm : 650  
Rack travel in m: 13.50...13.90  
3rd speed rpm : 1100  
Rack travel in m: 15.40...15.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1050  
Pressure hPa : 1500  
Rack travel mm : 15.70...15.80

#### Measurement

Speed 1/min : 1050

1st pressure hPa : -  
Rack travel in m: 8.20...8.60  
2nd pressure hPa : 340  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 840  
Rack travel in m: 13.60...14.00

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1500  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 198.5...202.5  
1000 s: (196.5...204.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 98.0...102.0  
1000 s: (96.0...104.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 14.40  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 11.40...12.40

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Del. quantity cm<sup>3</sup>/ : 28.0...32.0  
1000 s: (26.0...34.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: C.D.C. # 3916627

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

#### Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 5,9 w 1  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 736 810

Injection pump  
 Pump designation : PES6P110A12ORS7213  
 EP type number : 0 412 716 804  
 Governor  
 Governor design. : RQV400...1250PA964-2  
 K  
 Governor no. : 0 421 815 254

Customer-spec. information  
 Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 141.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 115...125

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

---

Rack travel in mm : 14.80...14.90

---

Del. quantity cm<sup>3</sup>/ : 15.9...16.1  
 100 s: (15.7...16.3)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 400.0  
 Rack travel in mm : 5.4...5.6  
 Del. quantity cm<sup>3</sup>/ : 3.3...3.7  
 100 s: (3.1...3.9)

---

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

## (B) Setting of injection pump with governor

### GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 0.70...1.10

2nd speed rpm : 400  
 travel mm : 1.40...1.60

3rd speed rpm : 600  
 travel mm : 2.90...3.30

4th speed rpm : 1300  
 travel mm : 7.20...7.40

5th speed rpm : 1500  
 travel mm : 9.10...9.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Aneroid pressure h: 1200  
 Del. quantity : 159.0...161.0  
 1000 : (157.0...163.0)



Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 13.80  
Speed rpm : 1295...1305  
2nd rack travel in: 4.00  
Speed rpm : 1455...1485  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 400  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 14.80...14.90  
2nd speed rpm : 800  
Rack travel in m: 13.00...13.20

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 1250  
Pressure hPa : 1200  
Rack travel mm : 14.80...14.90

Measurement  
Speed 1/min : 1250

1st pressure hPa : -  
Rack travel in m: 8.20...8.60  
2nd pressure hPa : 415  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 740  
Rack travel in m: 13.00...13.40

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 800  
Del.quantity cm3/ : 159.0...163.0  
1000 s: (157.0...165.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 95.5...99.5  
1000 s: (93.5...101.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.80  
Speed rpm : 1295...1305

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 12.00...13.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 33.0...37.0  
1000 s: (31.0...39.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks: : C.D.C. # 3919090

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 1  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 736 814

Injection pump  
 Pump designation : PES6P110A120RS7214  
 EP type number : 0 412 716 805  
 Governor  
 Governor design. : RQV350...1200PA964-6  
 K

Governer no. : 0 421 815 258

Customer spec. information  
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 115...125

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)

Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.50...14.60

Del.quantity cm<sup>3</sup>/ : 18.3...18.5

100 s: (18.1...18.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 2.8...3.2

100 s: (2.6...3.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.80...2.00

2nd speed rpm : 450  
 travel mm : 3.10...3.50

3rd speed rpm : 700  
 travel mm : 5.90...6.30

4th speed rpm : 1200  
 travel mm : 9.00...9.20

5th speed rpm : 1400  
 travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 1200  
 Del.quantity : 183.0...185.0  
 1000 : (181.0...187.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 13.50  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1405...1435  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 650  
Rack travel in m: 11.60...12.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1200  
Pressure hPa : 1200  
Rack travel mm : 14.50...14.60

#### Measurement

Speed 1/min : 1200

1st pressure hPa : -  
Rack travel in m: 7.70...8.10  
2nd pressure hPa : 270  
Rack travel in m: 9.50...9.60  
3rd pressure hPa : 700  
Rack travel in m: 12.60...13.00

#### START CUT-OUT

Speed 1/min : 265 (270)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 168.5...172.5  
1000 s: (166.5...174.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 90.0...94.0  
1000 s: (88.0...96.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (135.0...165.0)  
Rack travel in mm : 10.70...11.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 28.0...32.0  
1000 s: (26.0...34.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: C.D.C. # 3917089

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

#### Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 2  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 816  
 Injection pump  
 Pump designation : PES6P110A120RS7214  
 EP type number : 0 412 716 805  
 Governor  
 Governor design. : RQV350...1200PA964-8  
 K  
 Governor no. : 0 421 815 264

Customer-spec. information  
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 213.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve  
 : 1 417 413 047  
 Inlet press., bar : 1.50  
 Overflow  
 quantity min. 1/h: 115...125  
 Test nozzle holder  
 assembly : 1 688 901 101  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test lines : 1 680 750 008  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24  
 Prestroke mm : 4.35...4.45  
 : (4.30...4.50)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4  
 Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 14.70...14.80  
 Del.quantity cm<sup>3</sup>/ : 19.0...19.2  
 100 s: (18.8...19.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 350.0  
 Rack travel in mm : 5.6...5.8  
 Del.quantity cm<sup>3</sup>/ : 2.8...3.2  
 100 s: (2.6...3.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.80...2.00  
 2nd speed rpm : 450  
 travel mm : 3.10...3.50  
 3rd speed rpm : 700  
 travel mm : 5.90...6.30  
 4th speed rpm : 1200  
 travel mm : 9.00...9.20  
 5th speed rpm : 1400  
 travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 1200  
 Del.quantity : 190.0...192.0  
 1000 : (188.0...194.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 13.20  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.70...14.80  
2nd speed rpm : 650  
Rack travel in m: 12.50...12.90  
3rd speed rpm : 1200  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1100  
Pressure hPa : 1200  
Rack travel mm : 14.70...14.80

Measurement  
Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 7.70...8.10  
2nd pressure hPa : 260  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 710  
Rack travel in m: 12.80...13.20

#### START CUT-OUT

Speed 1/min : 265 (270)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 182.0...186.0  
1000 s: (180.0...188.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 90.0...94.0  
1000 s: (88.0...96.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (135.0...165.0)  
Rack travel in mm : 10.70...11.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Del. quantity cm<sup>3</sup>/ : 28.0...32.0  
1000 s: (26.0...34.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks: : C.D.C # 3916626

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:  
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 12,2 d  
 Edition : 31.07.90  
 Replaces : 7.2.89  
 Test oil : ISO-4113

Combination no. : 0 402 746 835

Injection pump  
 Pump designation : PES6P120A320RS7156  
 EP type number : 0 412 726 813  
 Governor  
 Governor design. : RQV250...1050PA793-2  
 Governor no. : 0 421 813 699

Customer-spec. information  
 Customer : PERKINS

Engine : EAGLE TX 350/375

1st version kW : 280.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.20...14.30

Del.quantity cm<sup>3</sup>/ : 27.7...27.9

100 s: (27.4...28.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.0...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 0.90...1.30

2nd speed rpm : 350  
 travel mm : 2.90...3.50

3rd speed rpm : 700  
 travel mm : 4.00...4.60

4th speed rpm : 1000  
 travel mm : 7.40...7.60

5th speed rpm : 1100  
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del. quantity : 277.0...279.0  
1000 : (274.0...282.0)  
Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 13.20  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 81...89

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 250...570

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 14.20...14.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.20...12.30  
2nd pressure hPa : 850  
Rack travel in m: 13.80...13.90  
3rd pressure hPa : 610  
Rack travel in m: 12.60...12.80

#### START CUT-OUT

Speed 1/min : 170 (190)

#### BREAKAWAY

1st version

M15

1mm rack travel less than  
full load rack tr: 13.20  
Speed rpm : 980...990

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 130.0...170.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 k 1  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 863  
 Injection pump  
 Pump designation : PES6P120A72ORS7179  
 EP type number : 0 412 726 826  
 Governor  
 Governor design. : RQV350..1150PA917K  
 Governor no. : 0 421 815 214

Customer-spec. information  
 Customer : FNH

Engine : 7.8L

1st version kW : 201.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve  
 : 2 417 413 072

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 103

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 17...19

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.00...14.10

Del.quantity cm<sup>3</sup>/ : 21.7...21.9

100 s: (21.4...22.2)

Spread cm<sup>3</sup> : 0.7

100 s: (1.1)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.0...5.4  
 Del.quantity cm<sup>3</sup>/ : 2.0...2.6  
 100 s: (1.8...2.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1215  
 travel mm : 9.40...9.60  
 2nd speed rpm : 350  
 travel mm : 2.20...2.40  
 3rd speed rpm : 450  
 travel mm : 3.40...4.00  
 4th speed rpm : 800  
 travel mm : 6.10...6.50  
 5th speed rpm : 1550  
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1380  
 Rack travel in mm : 6.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150



Aneroid pressure h: 1400  
Del. quantity : 217.0...219.0  
1000 : (214.0...222.0)  
Spread cm<sup>3</sup> : 7.00  
1000 : (11.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 13.00  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 64...72

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 350  
Rack travel in mm : 5.00...5.40

#### CONSTANT REGULATION

Speed rpm : 320...440

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 750  
Rack travel in m: 12.40...12.60  
3rd speed rpm : 550  
Rack travel in m: 11.30...11.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1150  
Pressure hPa : 1400  
Rack travel mm : 14.00...14.10

#### Measurement

Speed 1/min : 1150

1st pressure hPa : -  
Rack travel in m: 7.90...8.30  
2nd pressure hPa : 300  
Rack travel in m: 9.50...9.60

3rd pressure hPa : 850  
Rack travel in m: 12.40...12.80

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1400  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 212.0...218.0  
1000 s: (209.0...221.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 110.0...114.0  
1000 s: (108.0...116.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1210...1220

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...180.0  
1000 s: (145.0...185.0)  
Rack travel in mm : 10.90...11.50

Remarks:

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e6  
 Edition : 02.05.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113

Combination no. : 0 402 746 869

Injection pump  
 Pump designation : PES6P120A72ORS7164  
 EP type number : 0 412 726 816  
 Governor  
 Governor design. : RQV325...875PA848-29  
 K  
 Governer no. : 0 421 815 220

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : EMC6 250L 4VH

1st version kW : 196.0  
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)

Rack travel in mm : 12.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

---

Rack travel in mm : 13.00...13.10

---

Del. quantity cm<sup>3</sup>/ : 18.4...18.6  
 100 s: (18.2...18.8)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 325.0  
 Rack travel in mm : 4.7...4.9  
 Del. quantity cm<sup>3</sup>/ : 3.9...4.5  
 100 s: (3.7...4.7)

---

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.20...1.40

2nd speed rpm : 450  
 travel mm : 2.80...3.20

3rd speed rpm : 850  
 travel mm : 6.20...6.40

4th speed rpm : 1000  
 travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 875  
 Aneroid pressure h: 900  
 Del. quantity : 184.0...186.0  
 1000 : (182.0...188.0)

Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Testing:  
1st rack travel in: 12.00  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1035...1065  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 275  
Minimum rack trave: 5.90  
Speed rpm : 325  
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 510  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 650  
Rack travel in m: 13.90...14.20  
4th speed rpm : 450  
Rack travel in m: 0.00...14.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 900  
Rack travel mm : 14.90...15.10

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 10.40...10.80  
2nd pressure hPa : 205  
Rack travel in m: 11.70...11.80  
3rd pressure hPa : 460  
Rack travel in m: 13.90...14.30

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 510  
Del.quantity cm3/ : 252.0...258.0  
1000 s: (250.0...260.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 900  
Speed rpm : 875  
Del.quantity cm3/ : 179.0...181.0 \*  
1000 s: (151.0...173.5)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 152.0...156.0  
1000 s: (150.0...158.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...200.0  
1000 s: (150.0...210.0)  
Rack travel in mm : 10.40...10.80

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 39.0...45.0  
1000 s: (37.0...47.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks: : MACK # 313GC5181P4

Delivery-valve spring pre-tension  
3.0...3.2 mm.

\* This test specification applies only  
to the engine/nozzle-and-holder  
assemblies on an injection-pump test  
bench: setting for test equipment,  
check value for engine equipment.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 c3  
 Edition : 02.05.90  
 Replaces : 28.9.89  
 Test oil : ISO-4113

Combination no. : 0 402 746 876

Injection pump  
 Pump designation : PES6P120A720RS7157  
 EP type number : 0 412 726 814  
 Governor  
 Governor design. : RQV325...850PA929-3K  
 Governor no. : 0 421 815 232

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : E7-300 4VH

1st version kW : 220.0  
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 17...19

M20

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 20.4...20.6

100 s: (20.2...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.20...1.40

2nd speed rpm : 450  
 travel mm : 2.80...3.20

3rd speed rpm : 650  
 travel mm : 5.60...5.80

4th speed rpm : 900  
 travel mm : 8.30...8.50

5th speed rpm : 1100  
 travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 850  
 Aneroid pressure h: 1200  
 Del.quantity : 204.0...206.0  
 1000 : (202.0...208.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 51...59

### Testing:

1st rack travel in: 11.20  
Speed rpm : 890...900  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 7...15

### Testing:

Speed rpm : 275  
Minimum rack travel: 6.30  
Speed rpm : 325  
Rack travel in mm : 4.70...4.90

## CONSTANT REGULATION

Speed rpm : 325...520

## TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 600  
Rack travel in m: 12.50...12.70  
3rd speed rpm : 500  
Rack travel in m: 0.00...11.10

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1200  
Rack travel mm : 12.50...12.70

### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 7.70...8.10  
2nd pressure hPa : 265  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 565  
Rack travel in m: 11.20...11.60

## START CUT-OUT

Speed 1/min : 275 (285)

M21

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 241.0...247.0  
1000 s: (239.0...249.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 159.0...161.0 \*  
1000 s: (136.5...157.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 148.0...152.0  
1000 s: (146.0...154.0)

## BREAKAWAY

### 1st version

1mm rack travel less than  
full load rack tr: 11.20  
Speed rpm : 890...900

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...220.0  
1000 s: (170.0...230.0)  
Rack travel in mm : 10.00...10.60

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.70...4.90  
Del.quantity cm<sup>3</sup>/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

## Remarks:

: MACK # 313GC5185-P22

\* This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 12,2 f1
Edition : 17.09.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 746 882
Injection pump
Pump designation : PES6P120A32ORS7156-1
EP type number : 0 412 726 830
Governor
Governor design. : RQV350..1050PA941-1
Governor no. : 0 421 813 887

Customer-spec. information
Customer : PERKINS

Engine : 2006 TW-H

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder assembly : 1 688 901 019
Opening pressure, bar : 207...210
Orifice plate diameter mm : 0,8
Test lines : 1 680 750 067

Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant. per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 4.50...4.60 : (4.45...4.65)
Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 14.00...14.10
Del.quantity cm3/ : 26.9...27.1
100 s: (26.6...27.4)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 8.3...8.5
Del.quantity cm3/ : 6.3...6.9
100 s: (6.1...7.1)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 0.80...1.20
2nd speed rpm : 420
travel mm : 3.60...4.20
3rd speed rpm : 700
travel mm : 4.70...5.30
4th speed rpm : 1120
travel mm : 5.50...5.70
5th speed rpm : 1250
travel mm : 8.70...9.10

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 800
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1200
Del.quantity : 269.0...271.0
1000 : (266.0...274.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 98...106

#### Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 13.00  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 70...78

#### Testing:

Speed rpm : 200  
Minimum rack travel: 10.00  
Speed rpm : 350  
Rack travel in mm : 8.30...8.50

#### CONSTANT REGULATION

Speed rpm : 350...420

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 14.00...14.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 710  
Rack travel in m: 13.10...13.20  
3rd pressure hPa : 560  
Rack travel in m: 11.80...12.00

#### START CUT-OUT

Speed 1/min : 300 (320)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 275.0...281.0  
1000 s: (272.0...284.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 182.0...184.0  
1000 s: (179.0...187.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 185.0...225.0  
1000 s: (181.0...229.0)

#### Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 h  
 Edition : 28.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 883  
 Injection pump  
 Pump designation : PES6P110A32ORS7198  
 EP type number : 0 412 716 802  
 Governor  
 Governor design. : RQV275...1250PA942K  
 Governor no. : 0 421 815 234

Customer-spec. information  
 Customer : RVI

Engine : MIDR06-06-26

1st version kW : 132.5  
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70  
 : (4.55...4.75)  
 Rack travel in mm : 12.50...13.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 14.00...15.00  
 & maximum rack tra: 20.0...21.0  
 Difference ° CS : 2.50...4.00

BASIC SETTING

1st speed rpm : 1250  
 Rack travel in mm : 14.50...14.60  
 Del.quantity cm<sup>3</sup>/ : 15.3...15.5  
 100 s: (15.0...15.7)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 275.0  
 Rack travel in mm : 5.0...5.4  
 Del.quantity cm<sup>3</sup>/ : 1.8...2.3  
 100 s: (1.5...2.5)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320  
 travel mm : 9.70...9.90  
 2nd speed rpm : 275  
 travel mm : 0.90...1.10  
 3rd speed rpm : 600  
 travel mm : 4.20...4.60  
 4th speed rpm : 1000  
 travel mm : 7.10...7.50  
 5th speed rpm : 1600  
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1370  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP



1st version  
Speed rpm : 1250  
Aneroid pressure h : 1000  
Del.quantity : 153.0...155.0  
1000 : (150.5...157.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 110...118

Testing:  
1st rack travel in: 13.50  
Speed rpm : 1315...1325  
2nd rack travel in: 4.00  
Speed rpm : 1475...1505  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 58...66

Testing:  
Speed rpm : 200  
Minimum rack trave: 6.00  
Speed rpm : 275  
Rack travel in mm : 5.10...5.30

#### CONSTANT REGULATION

Speed rpm : 350...480

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 750  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 400  
Rack travel in m: 12.80...-13.20

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 1250  
Pressure hPa : 1000  
Rack travel mm : 14.50...14.60

Measurement  
Speed 1/min : 1250

1st pressure hPa : -  
Rack travel in m: 11.20...11.60

M25

2nd pressure hPa : 360  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 220  
Rack travel in m: 11.80...12.20

#### START CUT-OUT

Speed 1/min : 215 (235)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 119.0...123.0  
1000 s: (116.0...126.0)  
Aneroid pressure h: -  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 54.0...64.0  
1000 s: (51.0...67.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 34.0...44.0  
1000 s: (31.0...47.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 67.0...69.0  
1000 s: (64.5...71.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 1315...1325

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...115.0  
1000 s: (81.0...119.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : -9.10...-9.50  
Del.quantity cm<sup>3</sup>/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 h3  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 887  
 Injection pump  
 Pump designation : PES6P120A72ORS7200  
 EP type number : 0 412 726 833  
 Governor  
 Governor design. : 325...975PA944-2K  
 Governor no. : 0 21 815 237

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : E7-300A

1st version kW : 224.0  
 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 22...24

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 11.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 22.5...22.7

100 s: (22.3...22.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0  
 Rack travel in mm : 4.8...5.0  
 Del.quantity cm3/ : 4.0...4.6  
 100 s: (3.8...4.8)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.40...1.60  
 2nd speed rpm : 450  
 travel mm : 2.80...3.20  
 3rd speed rpm : 950  
 travel mm : 7.90...8.10  
 4th speed rpm : 1200  
 travel mm : 10.20...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 975  
 Aneroid pressure h: 1200  
 Del.quantity : 225.0...227.0  
 1000 : (223.0...229.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 12.00  
Speed rpm : 1015...1025  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 975  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 600  
Rack travel in m: 12.10...12.30  
3rd speed rpm : 500  
Rack travel in m: 11.30...11.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 975  
Pressure hPa : 1200  
Rack travel mm : 13.00...13.10

Measurement  
Speed 1/min : 975

1st pressure hPa : -  
Rack travel in m: 7.90...8.30  
2nd pressure hPa : 325  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 640  
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 250 (255)

FUEL DELIVERY CHARACTERISTICS

M28

1st version  
Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm3/ : 241.5...245.5  
1000 s: (239.5...247.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 149.0...153.0  
1000 s: (147.0...155.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...230.0  
1000 s: (180.0...240.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
: MACK # 313GC5188-P8

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:  
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 h4  
 Edition : 17.09.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 891  
 Injection pump  
 Pump designation : PES6P120A72ORS7200  
 EP type number : 0 412 726 833  
 Governor  
 Governor design. : RQV325...875PA944-6K  
 Governor no. : 0 421 815 241

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : EM7-250

1st version kW : 187.0  
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35  
 : (3.20...3.40)  
 Rack travel in mm : 11.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 21.5...21.7

100 s: (21.3...21.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.40...1.60

2nd speed rpm : 450  
 travel mm : 3.30...3.70

3rd speed rpm : 700  
 travel mm : 7.90...8.30

4th speed rpm : 900  
 travel mm : 9.40...9.60

5th speed rpm : 1050  
 travel mm : 10.60...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 875  
 Aneroid pressure h: 1200  
 Del.quantity : 215.0...217.0  
 1000 : (213.0...219.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 60...68

### Testing:

1st rack travel in: 11.50  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1035...1065  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 8...16

### Testing:

Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.80...5.00

## CONSTANT REGULATION

Speed rpm : 325...520

## TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 510  
Rack travel in m: 13.40...13.60  
3rd speed rpm : 600  
Rack travel in m: 13.40...13.60  
4th speed rpm : 450  
Rack travel in m: 12.70...13.10

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 13.40...13.60

## Measurement

Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 8.60...9.00  
2nd pressure hPa : 285  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 570  
Rack travel in m: 12.10...12.50

## START CUT-OUT

NO2

Speed 1/min : 250 (255)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm<sup>3</sup>/ : 292.5...296.5  
1000 s: (290.5...298.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 153.0...157.0  
1000 s: (151.0...159.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 915...925

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...230.0  
1000 s: (180.0...240.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

## Remarks:

: MACK # 313GC5188-P2

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

## Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 h5  
 Edition : 05.10.90  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 892  
 Injection pump  
 Pump designation : PES6P120A720RS7200  
 EP type number : 0 412 726 833  
 Governor  
 Governor design. : RQV325...975PA944-7K  
 Governor no. : 0 421 815 242

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : E7-250A

1st version kW : 180.0  
 Rated speed : 1950

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35  
 : (3.20...3.40)  
 Rack travel in mm : 11.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.30...12.40

Del. quantity cm<sup>3</sup>/ : 20.5...20.7

100 s : (20.3...20.9)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.0

Del. quantity cm<sup>3</sup>/ : 4.0...4.6

100 s : (3.8...4.8)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.40...1.60

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 950

travel mm : 7.90...8.10

4th speed rpm : 1200

travel mm : 10.20...10.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Aneroid pressure h: 1200

Del. quantity : 205.5...207.5

1000 : (203.5...209.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 54...62

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1015...1025  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 975  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 600  
Rack travel in m: 12.20...12.40  
3rd speed rpm : 800  
Rack travel in m: 12.40...12.60  
4th speed rpm : 500  
Rack travel in m: 11.40...11.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 975  
Pressure hPa : 1200  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 975

1st pressure hPa : -  
Rack travel in m: 8.80...9.20  
2nd pressure hPa : 340  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 600  
Rack travel in m: 11.50...11.90

START CUT-OUT

Speed 1/min : 250 (255)

NO4

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 234.0...238.0  
1000 s: (232.0...240.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 157.5...161.5  
1000 s: (155.5...163.5)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1015...1025

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...230.0  
1000 s: (180.0...240.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P6

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:  
Sliding-sleeve position = 37.0 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 l  
 Edition : 28.09.90  
 Replaces : 6.7.90  
 Test oil : ISO-4113

Combination no. : 0 402 746 893

Injection pump  
 Pump designation : PES6P120A32ORS7201  
 EP type number : 0 412 726 834  
 Governor  
 Governor design. : RQV275...1000PA948  
 Governor no. : 0 421 813 852

Customer-spec. information  
 Customer : RVI

Engine : MIDR 062045Q

1st version kW : 176.5  
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
 : (4.75...4.95)  
 Rack travel in mm : 12.50...13.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 12.50...13.50  
 & maximum rack tra: 20.0...21.0  
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.4...5.8

Del.quantity cm3/ : 3.1...3.7

100 s: (2.8...4.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1000

travel mm : 7.60...7.80

2nd speed rpm : 275

travel mm : 1.10...1.80

3rd speed rpm : 500

travel mm : 3.70...4.10

4th speed rpm : 770

travel mm : 5.90...6.30

5th speed rpm : 1400

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h : 900  
Del.quantity : 233.0...235.0  
1000 : (230.0...238.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 296...304

#### Testing:

1st rack travel in: 12.90  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 244...252

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.90  
Speed rpm : 275  
Rack travel in mm : 5.50...5.70

#### CONSTANT REGULATION

Speed rpm : 310...420

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...11.00  
2nd pressure hPa : 560  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 240  
Rack travel in m: 11.50...11.90

#### START CUT-OUT

Speed 1/min : 225 (245)

#### FUEL DELIVERY CHARACTERISTICS

NO6

1st version  
Aneroid pressure h: 900  
Speed rpm : 500  
Del.quantity cm3/ : 239.0...245.0  
1000 s: (236.0...248.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 92.0...102.0  
1000 s: (89.0...105.0)  
Spread cm3 : 10.00  
1000 s: (-)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 135.0...137.0  
1000 s: (132.0...140.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.90  
Speed rpm : 1065...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...180.0  
1000 s: (146.0...184.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : -8.10... -8.50  
Del.quantity cm3/ : 31.0...37.0  
1000 s: (28.0...40.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 i
Edition : 28.09.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 746 894
Injection pump
Pump designation : PES6P110A320RS7208
EP type number : 0 412 716 803
Governor
Governor design. : RQV275...1175PA942-1
K
Governor no. : 0 421 815 244

Customer-spec. information
Customer : RVI

Engine : MIDRO60226 M

1st version kW : 210.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values \_\_\_\_\_

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.10...4.20
: (4.05...4.25)

Rack travel in mm : 13.00...14.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 14.00...14.10
& maximum rack tra: 20.0...21.0
Difference ° CS : 2.75...4.25

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 17.1...17.3

100 s: (16.8...17.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320

travel mm : 9.70...9.90

2nd speed rpm : 275

travel mm : 0.90...1.10

3rd speed rpm : 600

travel mm : 4.20...4.60

4th speed rpm : 1000

travel mm : 7.10...7.50

5th speed rpm : 1600

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1370

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1175  
Aneroid pressure h : 1000  
Del.quantity : 171.0...173.0  
1000 : (168.5...175.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 110...118

Testing:  
1st rack travel in: 13.00  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control Lever  
position degrees: 56...64

Testing:  
Speed rpm : 200  
Minimum rack trave: 5.70  
Speed rpm : 275  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 350...480

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1175  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 700  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 400  
Rack travel in m: 12.40...12.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1175  
Pressure hPa : 1000  
Rack travel mm : 14.00...14.10

Measurement  
Speed 1/min : 1175

1st pressure hPa : -

Rack travel in m: 10.10...10.50  
2nd pressure hPa : 520  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 240  
Rack travel in m: 10.90...11.30

#### START CUT-OUT

Speed 1/min : 215 (235)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 147.0...153.0  
1000 s: (144.0...156.0)  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 50.0...60.0  
1000 s: (47.0...63.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 69.0...71.0  
1000 s: (66.5...73.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...115.0  
1000 s: (81.0...119.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : -8.80...-9.20  
Del.quantity cm<sup>3</sup>/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 h2  
 Edition : 17.09.90  
 Replaces : 8.8.90  
 Test oil : ISO-4113

Combination no. : 0 402 746 896

Injection pump  
 Pump designation : PES6P120A720RS7200  
 EP type number : 0 412 726 833  
 Governor  
 Governor design. : RQV325...900PA944-11  
 K

Governer no. : 0 421 815 260

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : E7-350

1st version kW : 261.0  
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

N10

Test pressure, bar: 22...24

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 11.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Phasing :  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900  
 Rack travel in mm : 14.50...14.60  
 Del.quantity cm<sup>3</sup>/ : 27.7...27.9  
 100 s: (27.5...28.1)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 325.0  
 Rack travel in mm : 4.8...5.0  
 Del.quantity cm<sup>3</sup>/ : 4.0...4.6  
 100 s: (3.8...4.8)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL  
 1st speed rpm : 325  
 travel mm : 1.40...1.60  
 2nd speed rpm : 450  
 travel mm : 2.80...3.20  
 3rd speed rpm : 700  
 travel mm : 6.00...6.40  
 4th speed rpm : 900  
 travel mm : 8.50...8.70  
 5th speed rpm : 1050  
 travel mm : 9.80...10.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Aneroid pressure h: 1200  
 Del.quantity : 277.5...279.5  
 1000 : (275.5...281.5)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

### Testing:

1st rack travel in: 13.50  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1105...1135  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 8...16

### Testing:

Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.80...5.00

### CONSTANT REGULATION

Speed rpm : 325...520

### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 625  
Rack travel in m: 13.60...13.80  
3rd speed rpm : 800  
Rack travel in m: 14.00...14.20  
4th speed rpm : 675  
Rack travel in m: 13.60...13.80  
5th speed rpm : 500  
Rack travel in m: 11.90...12.30

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 900  
Pressure hPa : 1200  
Rack travel mm : 14.50...14.60

### Measurement

Speed 1/min : 900

1st pressure hPa : -  
Rack travel in m: 8.00...8.40  
2nd pressure hPa : 400  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 775

N11

Rack travel in m: 12.70...13.10

### START CUT-OUT

Speed 1/min : 250 (255)

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 625  
Del.quantity cm<sup>3</sup>/ : 290.0...296.0  
1000 s: (288.0...298.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 150.0...154.0  
1000 s: (148.0...156.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 940...950

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...230.0  
1000 s: (180.0...240.0)  
Rack travel in mm : 19.00...21.00

### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

### Remarks:

: MACK # 313GC5188-P12

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

### Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 h1  
 Edition : 05.10.90  
 Replaces : 8.8.90  
 Test oil : ISO-4113

Combination no. : 0 402 746 897

Injection pump  
 Pump designation : PES6P120A720RS7200  
 EP type number : 0 412 726 833  
 Governor  
 Governor design. : RQV325...875PA944-12  
 K  
 Governor no. : 0 421 815 261

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : EM7-300  
 1st version kW : 224.0

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35  
 : (3.20...3.40)  
 Rack travel in mm : 11.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

---

Rack travel in mm : 14.00...14.10

---

Del.quantity cm<sup>3</sup>/ : 25.0...25.2  
 100 s: (24.8...25.4)

---

Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 325.0  
 Rack travel in mm : 5.1...5.5  
 Del.quantity cm<sup>3</sup>/ : 4.0...4.6  
 100 s: (3.8...4.8)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.40...1.60  
 2nd speed rpm : 450  
 travel mm : 3.30...3.70  
 3rd speed rpm : 700  
 travel mm : 7.90...8.30  
 4th speed rpm : 900  
 travel mm : 9.40...9.60  
 5th speed rpm : 1050  
 travel mm : 10.60...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 875  
 Aneroid pressure h: 1200  
 Del.quantity : 250.0...252.0  
 1000 : (248.0...254.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 61...69

### Testing:

1st rack travel in: 13.00  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 8...16

### Testing:

Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 5.10...5.50

## CONSTANT REGULATION

Speed rpm : 325...520

## TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 510  
Rack travel in m: 14.70...14.90  
3rd speed rpm : 575  
Rack travel in m: 14.70...14.90  
4th speed rpm : 450  
Rack travel in m: 13.80...14.20

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 14.70...14.90

### Measurement

Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 8.70...9.10  
2nd pressure hPa : 370  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 760  
Rack travel in m: 13.30...13.70

## START CUT-OUT

N13

Speed 1/min : 250 (255)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm<sup>3</sup>/ : 328.0...334.0  
1000 s: (326.0...336.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 156.0...160.0  
1000 s: (154.0...162.0)

## BREAKAWAY

### 1st version

1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 915...925

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...230.0  
1000 s: (180.0...240.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 5.10...5.50  
Del.quantity cm<sup>3</sup>/ : 40.0...46.0  
1000 s: (38.0...48.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

## Remarks:

: MACK # 313GC5188-P10

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

## Bow dimension:

Sliding-sleeve position = 37.0 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 c 4  
 Edition : 17.09.90  
 Replaces : 12.1.90  
 Test oil : ISO-4113

Combination no. : 0 402 776 807

Injection pump  
 Pump designation : PES6P120A720LS7120-2  
 EP type number : 0 412 726 832  
 Governor  
 Governor design. : RSV350...1050POA529  
 -3  
 Governor no. : 0 421 83j 332

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM447 A

1st version kW : 213.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 650

---

Rack travel in mm : 14.00...14.20

---

Del.quantity cm3/ : 20.2...20.4  
 100 s: (19.9...20.7)

---

Spread cm3 : 0.5  
 100 s: (0.9)

---

2nd speed rpm : 350.0  
 Rack travel in mm : 5.6...5.8  
 Del.quantity cm3/ : 1.4...2.0  
 100 s: (1.1...2.3)

Spread cm3 : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 650  
 Del.quantity : 202.0...204.0  
 1000 : (199.0...207.0)

Spread cm3 : 5.00  
 1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 94...106

Testing:

1st rack travel in: 12.40  
Speed rpm : 1080...1090  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.40...13.60  
2nd speed rpm : 950  
Rack travel in m: 14.00...14.20  
3rd speed rpm : 875  
Rack travel in m: 14.50...14.70  
4th speed rpm : 750  
Rack travel in m: 14.90...15.10

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.30...12.50  
2nd pressure hPa : 400  
Rack travel in m: 13.20...13.40  
3rd pressure hPa : 850  
Rack travel in m: 14.30...14.50  
4th pressure hPa : -  
Rack travel in m: 11.30...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

N15

Aneroid pressure h: 1200  
Speed rpm : 1030  
Del.quantity cm3/ : 194.0...197.0  
1000 s: (191.0...200.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 219.0...224.0  
1000 s: (216.0...227.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1080...1090

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 P20
Edition : 21.06.90
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/12F1250 R359
Type number : 0 460 424 054

Customer-specific information
Customer : CUM

Engine : 48TA

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 0.35

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0
x Wall thickness : 2.0
x Length mm : 840.0

Start of delivery block
Piston stroke mm: 1.25
mm: +0.02(0.06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 2.0...2.4

Supply-pump pressure:

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value bar: 5.1...6.1

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 83.0...84.0
Dispersion cm3/ : 4.0
1000H : (4.5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 53.0...54.0

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 10.0...12.0
Dispersion cm3/ : 5.5
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1330
Charge press. hPa: 1000
Del.quantity cm3/
1000H: 68.0...74.0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 80.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
TD travel mm: 2.9...3.9
mm: (2.9...3.9)

2nd speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 0.9...1.7
mm: (0.6...2.0)

3rd speed 1/min: 1100
Charge press. hPa: 1000
TD travel mm: 2.0...2.4
mm: (1.5...2.9)

4th speed 1/min: 1250
Charge press. hPa: 1000

TD travel mm: 2.8...3.6  
mm: (2.5...3.9)

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 2.6...3.2  
2nd speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4.9...5.5  
3rd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump pressure bar: 5.3...6.2  
4th speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.0...6.6

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow quantity cm<sup>3</sup>/10s: 41...83  
2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: 55...138

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 535  
Del.quantity cm<sup>3</sup>/: 71.5...72.5  
1000H.: (68.0...76.0)  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
3rd speed 1/min: 1430  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
4th speed 1/min: 1330  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 68.0...74.0  
1000H.: (65.0...77.0)  
5th speed 1/min: 1250  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 76.5...79.5  
1000H.: (75.0...81.0)  
6th speed 1/min: 1100  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 77.5...80.5  
1000H.: (75.5...82.5)  
7th speed 1/min: 850

Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/: 83.0...84.0  
1000H.: (80.5...86.5)  
8th speed 1/min: 700  
Charge press. hPa: 535  
Del.quantity cm<sup>3</sup>/: 71.5...72.5  
1000H.: (68.0...76.0)  
9th speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 53.0...54.0  
1000H.: (49.5...57.5)

#### Zero delivery (stop):

#### Mech. shutoff:

Speed 1/min: 1250  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

#### Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 10...12.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 450  
Del.quantity cm<sup>3</sup>/: 0.0...2.0  
1000H.: -

#### Automatic starting fuel delivery:

1st speed 1/min: 130  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 80.0  
2nd speed 1/min: 250  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 40.0

#### Shutoff electromagnet:

Cut-in min. voltage : 10.0  
Rated voltage : 12.0

#### Mounting and assembly dimensions:

#### Designation

K mm : 3.7  
MS mm : 0.8...1.2  
SVS max. mm : 2.1  
XK mm : 21.8...23.8  
XL mm : 11.3...14.7

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 P25  
 Edition : 21.06.90  
 replaces : -  
 Calibrating oil : ISO 4113  
 Injection pump : VE 4/12F1150 R378  
 Type number : 0 460 424 058  
 Customer Part-No. : 3 917 508

Customer-specific information  
 Customer : CUM

Engine : 4BT 3.9  $\mu$ ND.

TEST BENCH REQUIREMENTS

Calibrating-oil  
 return temp. °C  
 with thermometer : 40...48  
 electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
 assembly : 1 688 901 027

Opening  
 pressure bar : 250...253

Perforated-plate  
 diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0  
 x Wall thickness : 2.0  
 x Length mm : 840.0

Start of delivery  
 Prestroke mm : 0.3  
 (from BDC):  $\pm$ 0.02(0.04)

Start of delivery block  
 Piston stroke mm: 1.8  
 mm:  $\pm$ 0.02(0.06)

Outlet : A

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

Setting value mm: 2.0...2.4

Supply-pump pressure:

Speed 1/min: 900  
 Setting value bar: 4.2...4.8

Full-load del. w/out charge press.:

Speed 1/min : 900  
 Del.quantity cm<sup>3</sup>/  
 1000H.: 67.0...68.0  
 Dispersion cm<sup>3</sup>/: 4.0  
 1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375  
 Del.quantity cm<sup>3</sup>/  
 1000H.: 8.0...14.0  
 Dispersion cm<sup>3</sup>/: 5.5  
 1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1190  
 Del.quantity cm<sup>3</sup>/  
 1000H: 47.0...53.0

Start:

Speed 1/min: 100  
 Del.quantity : -  
 mind cm<sup>3</sup>/1000H.: 70.0

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
 TD travel mm: 1.8...2.6  
 mm: (0.5...1.9)  
 2nd speed 1/min: 900  
 TD travel mm: 2.0...2.4  
 mm: (1.5...2.9)  
 3rd speed 1/min: 1150  
 TD travel mm: 3.2...4.0  
 mm: (2.9...4.3)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
 Supply-pump  
 pressure bar: 2.5...3.1  
 2nd speed 1/min: 900  
 Supply-pump  
 pressure bar: 4.2...4.8  
 3rd speed 1/min: 1150

Supply-pump  
pressure bar: 5.2...5.8

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)

2nd speed 1/min: 1150  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -

2nd speed 1/min: 1220  
Del.quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -

3rd speed 1/min: 1190  
Del.quantity cm<sup>3</sup>/: 47.0...53.0  
1000H.: (44.0...56.0)

4th speed 1/min: 1150  
Del.quantity cm<sup>3</sup>/: 63.5...66.5  
1000H.: (62.0...68.0)

5th speed 1/min: 900  
Del.quantity cm<sup>3</sup>/: 67.0...68.0  
1000H.: (64.5...70.5)

6th speed 1/min: 750  
Del.quantity cm<sup>3</sup>/: 69.5...73.5  
1000H.: (67.5...75.5)

7th speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 68.0...76.0  
1000H.: (66.0...78.0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150  
Del.quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm<sup>3</sup>/: 8.0...14.0  
1000H.: (6.0...16.0)

2nd speed 1/min: 500  
Del.quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H.: 80.0

2nd speed 1/min: 240  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H.: 80.0

Shutoff electromagnet:

Cut-in  
min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm : -  
KF mm : 5.0...5.4  
MS mm : 1.1...1.3  
SVS max. mm : 4.0

Remarks:

Heavy-duty fuel-injection pump for  
DI-engines: only test using timing-  
device-travel measuring device with  
metal jacket

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 N20  
Edition : 24.10.89  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/12F1150 R378  
Type number : 0 460 424 058

Customer-specific information  
Customer : CDC

Engine : 4 BT - 3.9 IND.

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0.3  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm : 1.8  
mm:  $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900  
Setting value mm: 2.0...2.4

Supply-pump pressure:

Speed 1/min: 900  
Setting value bar: 4.2...4.8

Full-load del. w/out charge press.:

Speed 1/min: 900  
Del.quantity cm<sup>3</sup>/  
1000H.: 67.0...68.0  
Dispersion cm<sup>3</sup>/  
1000H.: (4.5)

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm<sup>3</sup>/  
1000H.: 8.0...14.0  
Dispersion cm<sup>3</sup>/  
1000H.: (7.0)

Full-load speed regulation:

Speed 1/min: 1190  
Del.quantity cm<sup>3</sup>/  
1000H.: 47.0...53.0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 70.0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
TD travel mm: 0.8...1.6  
mm: (0.5...1.9)  
2nd speed 1/min: 900  
TD travel mm: 2.0...2.4  
mm: (1.5...2.9)  
3rd speed 1/min: 1150  
TD travel mm: 3.2...4.0  
mm: (2.9...4.3)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 2.5...3.1  
bar: (2.3...3.3)  
2nd speed 1/min: 900  
Supply-pump  
pressure bar: 4.2...4.8  
bar: (4.0...5.0)



3rd speed 1/min: 1150  
Supply-pump pressure bar: 5.2...5.8  
bar: (5.0...6.0)

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow quantity cm<sup>3</sup>/10s: 41...83  
(26...98)  
2nd speed 1/min: 1150  
Overflow quantity cm<sup>3</sup>/10s: 55...138  
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300  
Del. quantity cm<sup>3</sup>/1000H.: 0.0...3.0  
(0.0...3.0)  
2nd speed 1/min: 1220  
Del. quantity cm<sup>3</sup>/1000H.: 15.0...55.0  
(15.0...55.0)  
3rd speed 1/min: 1190  
Del. quantity cm<sup>3</sup>/1000H.: 47.0...53.0  
(44.0...56.0)  
4th speed 1/min: 1150  
Del. quantity cm<sup>3</sup>/1000H.: 63.5...66.5  
(62.0...68.0)  
5th speed 1/min: 900  
Del. quantity cm<sup>3</sup>/1000H.: 67.0...68.0  
(64.5...70.5)  
6th speed 1/min: 750  
Del. quantity cm<sup>3</sup>/1000H.: 69.5...73.5  
(67.5...77.5)  
7th speed 1/min: 500  
Del. quantity cm<sup>3</sup>/1000H.: 68.0...76.0  
(66.0...78.0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150  
Del. quantity cm<sup>3</sup>/1000H.: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/1000H.: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/1000H.: 8.0...14.0  
(6.0...16.0)  
2nd speed 1/min: 500

Del. quantity cm<sup>3</sup>/1000H.: 0.0...4.0  
(0.0...4.0)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Del. quantity cm<sup>3</sup>/1000H.: -  
ind. 1000H.: 80.0

2nd speed 1/min: 240  
Del. quantity cm<sup>3</sup>/1000H.: -  
max. 1000H.: 80.0

Mounting and assembly dimensions:

Designation

K mm : -  
KF mm : 5.0...5.4  
MS mm : 1.1...1.5  
SVS max. mm : 4.0

Remarks:

: C.D.C. # 391 7507

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3.9 P31  
Edition : 22.06.90  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/12F1050 R389  
Type number : 0 460 424 065  
Customer Part-No. : 3 917 517

Customer-specific information  
Customer : CUM

Engine : 4BT-390 AUTOM.

Power k: 78  
Speed 1/mi: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0  
x Wall thickness : 2.0  
x Length mm : 840.0

Start of delivery  
Prestroke mm : 0.2  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.0  
mm:  $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel:

Speed 1/min: 750  
Charge press. hPa: 1000  
Setting value mm: 3.4...3.8

## Supply-pump pressure:

Speed 1/min: 750  
Charge press. hPa: 1000  
Setting value bar: 5.0...5.6

## Full-load del. with charge press.:

Speed 1/min: 750  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H.: 89.5...90.5  
Dispersion cm<sup>3</sup> / : 4.0  
1000H : (4.5)

## Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm<sup>3</sup>/  
1000H.: 63.5...64.5

## Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm<sup>3</sup>/  
1000H.: 8.0...14.0  
Dispersion cm<sup>3</sup> / : 5.5  
1000H.: (7.0)

## Full-load speed regulation:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Del.quantity cm<sup>3</sup>/  
1000H: 59.0...65.0

## Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 60.0

Inspection-pump test specifications  
Test specifications in parentheses

## Timing-device characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
TD travel mm: 1.7...2.5  
mm: (1.4...2.8)

2nd speed 1/min: 750  
Charge press. hPa: 1000

TD travel mm: 3.4...3.8  
mm: (2.9...4.3)  
3rd speed 1/min: 1050  
Charge press. hPa: 1000  
TD travel mm: 4.7...5.5  
mm: (4.4...5.8)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3.9...4.5  
2nd speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump pressure bar: 5.0...5.6  
3rd speed 1/min: 1050  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6.3...6.9

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow quantity cm<sup>3</sup>/10s: 41...83  
cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1050  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 350  
Del. quantity cm<sup>3</sup>/: 79.5...80.5  
1000H.: (76.0...84.0)  
2nd speed 1/min: 1180  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
1000H.: -  
3rd speed 1/min: 1120  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 15.0...55.0  
1000H.: -  
4th speed 1/min: 1100  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 59.0...65.0  
1000H.: (56.0...68.0)  
5th speed 1/min: 1050  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 76.5...79.5  
1000H.: (75.0...81.0)  
6th speed 1/min: 750  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 89.5...90.5  
1000H.: (87.0...93.0)  
7th speed 1/min: 700

Charge press. hPa: 350  
Del. quantity cm<sup>3</sup>/: 79.5...80.5  
1000H.: (76.0...84.0)  
8th speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 63.5...64.5  
1000H.: (60.0...68.0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1050  
Del. quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0.0...3.0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/: 8.0...14.0  
1000H.: (6.0...16.0)  
2nd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.0...4.0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H.: 60.0  
2nd speed 1/min: 230  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H.: 60.0

Shutoff electromagnet:

Cut-in min. voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm : -  
KF mm : 5.6...6.0  
MS mm : 0.9...1.3  
SVS max. mm : 2.2

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for  
DI-engines: only test using timing-  
device-travel measuring device with  
metal jacket